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TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

A. D. 1894-95.

PART I.

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REPORT OF THE SECRETARY.

WORCESTER COUNTY
HORTICULTURAL SOCIETY,
A. D. 1894.

ANNUAL REPORT OF THE SECRETARY.

To the Members

of the

WORCESTER COUNTY HORTICULTURAL SOCIETY:

IT has been a long time since your *Secretary* could so cordially congratulate you upon the manifest, increasing prosperity of the Society. By this I mean not so much a gain in material resources, since we have suffered in common with others from the late prevalent depression in business activity. But, under the circumstances, you must realize that any reduction of indebtedness is a signal gain; nor can you fail to take note of that lively interest in our weekly exhibitions which became so evident during the past official year. Accessions to your Roll of Membership are counted by the score, comprising all ages and either sex; men in the prime of life, who have proved all things and would fain hold fast that which is good; and their juniors, in the first flush of eager expectancy, who have yet to learn that fruition is the child of many disappointments, and are too sanguine to have their hearts made sick by hope deferred. Our exhibitions have been well attended; largely by those who evinced genuine interest in them, as well for the instruction imparted as for their intrinsic attraction. And for what other purpose do we hold them, at great expenditure of money, labor, and time! Let us rejoice that the gospel which

we have expounded, so long and wearily, is at last yielding its harvest! Let us take courage, and resolve that we will continue to merit success by ever striving for improvement! And let it be our fixed, inflexible policy to impress upon the consciousness of the community, that the aim and object of our Society,—its reason for existence,—is not the distribution of so much money by way of premiums for specimens exhibited; but rather to ensure that there shall be specimens worthy of exhibition which shall not derogate from the past floral and pomological rank and reputation of Worcester County.

The names of those who have served this Society, since its earliest organization, in the capacity of *Librarian*, may be counted on the fingers of one hand. Of them all, to CLARENDON HARRIS belongs the exceeding credit. Of studious tastes, a book-seller of good repute and sound judgment, of closest kin to the Librarian of Harvard University for a generation, no man could have been found so well fitted, by natural inclination or business training, to see to the proper filling of your empty shelves. For it was his concern, or at least he so construed it (and who shall impugn the correctness of his decision?), to provide for the legitimate wants of a Society, founded in a rural County of Massachusetts, for the declared purpose of "Advancing the Science, and encouraging and improving the Practice of Horticulture," within a territory of limited area it may be, but yet of such diversified climate and soil as to admit of the cultivation of all the choicer fruits of the temperate zones. When he took charge of your Library, then but a name, *Hovey's Magazine* was still in its infancy, the *Gardener's Chronicle* had not yet been published, nor had Andrew J. Downing embodied his stores of experience and study in that priceless work which has so long directed the steps of the American Pomologist. When he resigned his charge to the inexperienced hands of the present writer, Mr. Harris transferred a choice collection of volumes, mostly bound, that might be said to comprehend a summary of the best approved Horticultural knowledge and practice to that date, of the best editions, by authors whose fame acquires new lustre with every passing day.

Nor should the felicitous character of his surroundings, in that connection, be overlooked. That was not an era of clubs; people keeping early hours and electing the homestead rather than herbergage. But such wholesome customs did not preclude good fellowship; and the day was accounted ill-spent whereof a half-hour had not been pleasantly occupied in the book-store, or office subsequently, of Mr. Harris. Of that rare company, were Frederic William Paine, Anthony Chase, John Milton Earle, William Lincoln, Isaac Davis, Benjamin F. Thomas, and, need I add? John Green. All versed in polite literature, each devoted to Horticulture for its own sake and not its possible premiums, and every one actively interested for the welfare of the young Society which they had just united to establish. To their unselfish liberality may we attribute the early formation of the Library itself, its nucleus, in default of other resources, being the volumes given by those gentlemen from their private collections. Meeting for the daily pinch of snuff, as was their wont and the custom of their time, they constituted a sort of volunteer council, prompt to discern needs which they were equally quick and ready to supply. So that it happened, without public fuss, or fume of newspaper, that there was a gradual, steady accretion to the stock of sound knowledge essential to mastery of Horticulture, so far as declared in print by its recognized scientists. And it may be asserted, with entire confidence, that, when it was deemed expedient to transfer the Library to this Hall, in the interest of its more general use, no collection of its size could be named better suited to its specific aim and object, than that which Clarendon Harris delivered in such admirable condition to your *Secretary* who, A. D. 1862, was elected Librarian.

And now, having served in that capacity for a long series of years, subsequently acting as Chairman of your Committee on Library and Publication, I take occasion thus publicly to repel the assumption that there has been any dereliction of duty on the part of successive Librarians down to the present day; or that the Committee on Library has been remiss in official oversight and action. The files of Journals and Mag-

azines have been perfected, as published, although some may seem deficient to those who are not aware that their issue was suspended because of inadequate patronage due to lack of remunerative appreciation. Of this, the *Floral Magazine* and the *Florist and Pomologist*, are deplorable instances abroad; while *Hovey's Magazine* and *The Gardener's Monthly* have left a void not exactly filled, at home, by any of their more pretentious successors. Of State Reports, more precisely designated as Agricultural, many series were discontinued during and because of the War of Secession, in several cases never to be resumed. Some of you may be surprised to learn that even the imperial State of New York felt so far constrained by necessity as to put a stop to the issue of its excellent Agricultural Transactions. For many volumes from different States we had been under obligations to the State Board of Agriculture (Secretary Russell notably), by whom they had been received in duplicate. For years we had little to proffer in exchange; and perforce became deeply indebted for favors that it was impossible to repay in kind. Latterly, our position, in this respect, has been greatly improved by the resumption of publication of our own Transactions, in enlarged form and much enhanced value.

I assert deliberately, and of personal knowledge, that your Library now comprises all Horticultural literature extant, of sterling authority or worth, with a minimum of printed rubbish. It was never the aim of the Committee to waste your substance, or to lumber up space by a portentous load of mere black-letter. If endowed with a "Stickney Fund," it might be practicable, were it desirable, to accumulate works that are simply curious because of age or rarity, and rare or old because there was never enough demand for them to require a new edition. No one can say that your Committee ever declined to buy a book that commended itself to their judgment, when its purchase was once suggested.

In the specification of official short-comings, the incompleteness of *Curtis's Botanical Magazine*, and equally of the *Transactions* of the Royal Horticultural Society, is particularly noted.

But for years the Royal Horticultural Society published no Transactions, being vitally concerned with the more essential problem of how to maintain its very existence. Virtually bankrupt, it had neither pounds, shillings, nor pence, for the printer. With reference to the *Botanical Magazine*, it need only be said that there has never been a day when an order was not in force in London authorizing a purchase of the only series lacking to complete our set, whenever it could be obtained at a reasonable price. Patient waiters are seldom losers; and who can better wait than an incorporated Society, which knows not death! And now, in behalf of the Committee on Library, which is willing to assume all just responsibility for its action, or omission to act, I desire to state that we plead no inadequacy of means, having got all that we asked for Library purposes, and having asked all that we ought in reason. Few works are written now-a-days that are much more than a re-hash of older treatises. The tendency of contributions from scientists is toward the weekly papers like the *English Chronicle*, or *Garden*, and in our own county the *American Garden* or *Country Gentleman*. When members have expressed a wish to that effect, any designated work of manifest value has been speedily obtained. For more than thirty years scarcely a day has passed in which the writer was not present at the Library, prepared to listen to any one that had a suggestion to make which might augment the intrinsic worth of our collection of books or tend to facilitate their circulation. And it must ever be borne in mind that the use of such Libraries, special as they are, cannot be forced. People may consult them, to settle doubtful points, or to obtain light upon matters of practice, where all is dark elsewhere, but they do not sit down to a perusal of their volumes for mental relaxation or delight, as with the pages of history or romance. The pursuit of artistic or technical learning must be a still-hunt: it cannot be run down by a pack of hounds in full cry.

The statement has been made broadly, that there are many works of exceeding interest and worth which could be had for the bare asking; works published under the auspices and at the expense of the Federal Government; and that upon a request

to our "Congressman" (? Representative, or Senator), they would be supplied so quickly as to take away our breath. Possibly! Yet your *Secretary*, who is not easily discouraged, confesses that his ardor was thoroughly chilled by the indifference that met his repeated and earnest appeals in former years, when acting as Librarian, for copies of the Reports of Explorations in our Western Territories, replete as they were with exact information, and carefully illustrated in both form and tint. All the time, it was notorious that the shelves of second-hand bookstores in Washington groaned beneath their burden of such volumes, sold for a song by members of Congress to whom literature was of value in proportion to what it would bring in "spot cash"! In succeeding years these appeals were renewed with even greater importunity in the Annual Reports of your *Secretary*. When respectful requests are suffered to pass unheeded, what else would you have? Shall the Society go down upon its knees in pliant supplication for any bone that might otherwise be thrown to the congressional dog! Not so do your Committee estimate the position and dignity of the WORCESTER COUNTY HORTICULTURAL SOCIETY in its peculiar sphere and province. Nor in any such ignoble way would they suffer it to demean itself for whatsoever amount of thrift might ensue upon fawning. Here we stand, as for a half-century past, upon our own freehold; instinct with quick, fruitful life; bestowing the results of our experiments and practice freely upon all, without money or price; grateful for aid, and welcoming co-operation; yet able to maintain ourselves in future as of yore, if needs must be and the exacting selfishness of politics so wills. Let parties fuss and fret over "protection," if they choose; and worry over the precise percentage that may be required to save the Sugar Trust from collapse! Some day it will dawn upon the Yankee intellect that the fair flowers and wholesome fruits from our gardens or orchards are as richly entitled to care as the mechanical product of loom or rolling-mill; and that the modest Florist or Pomologist, who seeks simple freedom from oppressive discrimination, shall be favored with all the encouragement possibly derived from observation and research of the ablest scientists

in the public service. Geological and Botanical Surveys are ordered of all portions of the Republic; but their results remain virtually a sealed book. Commissions are created to find out why men do not work, when they have declared that they will not! Or why other some cannot, who are forcibly prevented! But disease and disaster may assail the Apple, Grape, or Peach, threatening the produce of our orchards and farms in myriad destructive forms, and neither Senator nor Representative move for investigation, or trouble themselves to promote inquiry by others. I challenge denial of the assertion that a discovery of an effectual safeguard from the yellows in the peach would be worth more to the American people than all the "Protection" that has ever lain like an incubus upon industrial energy, stifling its free aim and action. Insure immunity from that fell disease, and the pink of the peach blossom shall again tint our local landscape, as in days of yore when Cooledge and Crawford budded and bore their luscious harvest. Do Congress, or the General Court, know or care that within the year just past the very meanest apples have been quoted at from five to seven dollars per barrel? A State Tax to exterminate an insect of exhaustless fecundity—an *Ocneria dispar* which few have seen, and which is most to be dreaded as an invader of the public treasury! A Federal million from a Saccharine Senate to stop thistle-down in its flight! But what measures of practical utility to save the product of our orchards from destruction, or to guaranty the existence of those very orchards against the time when man, ceasing to be carnivorous, shall find nourishment and long life in the fruit that, first planted in Eden, was co-eval with his original existence.

It would be absurd to argue that a Catalogue of a Special Library would be superfluous, while it is entirely reasonable to contend that for the present at least, in our own case, there is no imperative demand for one. Most of those who use our volumes are impelled by some instant need for information, upon a particular fact, or theory, of cultivation. The Librarian can easily attend to all such wants, quickly placing his hand upon the requisite treatise. The scholar, who might spend

hours in research through our more recondite pages, knows well where to look, when allowed free access to our choicer treasures. The most thriftless tendency of our age is its frenzied inclination to jump at conclusions. To assume that all is desirable which we have not in immediate possession; and that our mission must be fruitless unless we hastily acquire, regardless of cost and our financial condition, that which we can as well forego; and which, at best, is but an inadequate means to an uncertain end. All catalogues, card or other, will be of slight avail to those who are indifferent to the contents which they indicate. There are no royal roads to learning; and upon its common highways the ordinary indices sufficiently point out the obvious route. There is but one instance on record where the hedge-rows were raked to provide guests at a feast. Was the success then so great as to invite imitation? Our privileges are open to all upon almost nominal terms. That which is proffered gratuitously, or which can be gained without trouble, is seldom greatly valued. Keeping in touch and sympathy with the times, it may still be worth our while to realize that the millennium is somewhat remote.

In an address before an informal concourse of members, on the 11th of January last, the *President* of the Society was pleased to say:

"A Society like this should possess a herbarium. The nucleus of one the Society can have at any time by accepting the offer of a member of the Society and complying with the conditions imposed by him. That gentleman, perhaps the most accomplished botanist in this city, has offered to us his pressed, and mounted, and complete collection of the flora of Worcester County, on condition that the Society provide a suitable, or, in other words, a glass case. If want of room prevents compliance with the condition and consequent acceptance of such a munificent offer, then the sooner we pull down and build anew the better."

Was not the alternative put somewhat strongly? Concede howsoever much value you please to a herbarium,—yet what we have foregone so many years might not be wholly indispensable awhile longer. It is not clear from the text who

should be held responsible for that particular lâches—the omission to do something that is thought ought to have been done. The Committee on Finance, to whom you have confided the custody and supervision of your Estate, have no cognizance of any such offer as stated. Had any definitive proposition to that effect been made to them, they would either have taken what steps were necessary or have submitted the matter to the Society for its decision. Your *Secretary* has neither memory, nor record, of such a proposed gift. It was never his wont to repel "munificence," for which, in the interest of Horticulture, he would rather incline to gratitude. Perhaps it may appear advisable, before we pull down this Hall in order to accommodate a gift that is somewhat veiled by the mists of uncertainty, to pay off the debt incurred for its construction. And even thereafter may obtrude the doubt, alike puzzling and persistent, whether occasion for pyramid and mummy did not, ages since, pass into "innocuous desuetude"! Of yore the lover of flowers pursued his fancy under difficulties hard for us to realize. He was remote from all fellowship, unless perchance the inmate of a monastery; and even then unbroken silence was, in some cases, an inexorable law of existence. His life was that of a hermit. If he studied after sunset, it was by the feeble flicker of a rush-light. He enjoyed few facilities for investigation, and had nowhere to resort for aid. Perforce he must dry his specimens for subsequent research or reference, if he would not repeat his wearisome task of hunting through bog or forest, of patient analysis and lonely discovery, whereof, if aught happened to him, there was no printing-press to preserve the narration.

In this Hall is, or should be ever, a home for Horticulture in its most comprehensive meaning, embracing Floral and Pomological Science and Practice in their truest acceptation. A practice and science which, excluding the charlatan, has no tolerance for the pedant. Too long has Dry-as-Dust ministered as High Priest at the altars of Flora, only yielding place, under direst compulsion, if at all, to the imperative behests of an insatiate mammon. The Florist in fact and verity, confesses no

moribund faith; owes and pays reverence to no spurious priesthood. He relinquishes analysis of pistil and stamen to the student of abstract learning, whose microscope detects germ or fungus, if not bacillus or microbe; because of whose omnipresence and endless fecundity the wonder is that the human race has so long protracted an unwholesome existence. But, in doors or out, in ample field or limited garden, he pursues the bent of his personal taste, thereby escaping the ruts so deadly to intellectual progress; seeking ever the new and worthy; avoiding always whatsoever is found upon trial, to be of ill repute, or worthless, when grown. Before him, in all their vitality, are out-spread root, trunk, branch, leaf, bud, bloom, or fruit. His concern is with the present, letting Autumn and Winter alone, like the dead past, to bury their dead. What need has he, in this age of daily or hourly intercommunication; in this age when thought is borne upon wings of lightning, and perserved upon myriads of printed pages; in this fair land of ours where, in little more than a single day, he can pass from the depressing influence of ice and snow to the bourgeon and bloom of Magnolia and Rose or, in a few hours more, to the fragrance and flavor of Orange and Pineapple; what need has he, or why should he trouble himself, for the withered leaves and desiccated stems of a vegetation that, having fulfilled its allotted mission, died as it ought!

Nor is the science of Botany, so far as in strict justice it can be termed a science, regarded in the same light as formerly by its most advanced votaries. *Meehan's Monthly*, edited by one of the foremost Arboriculturists and Florists in this or any other country, quotes *Professor* Millspaugh to the subjoined effect, if not with open approval at least without declared dissent:

"In the old time, and that not so many years ago, all that was taught of botany, was how to analyse flowers, so as to be able to understand the descriptions in the text books, and thus enable one to collect and distinguish species—after which specimens were carefully dried and put away; and the results of little more value than the results following a boy's collection of postage stamps. In modern times the flower-lover is really

more of a botanist than the old-time collector of museum specimens. He looks into the flowers and watches their growth, endeavors to understand how they are made and studies how they behave; and those particular branches of study indicate a botanist to-day, far more correctly than the mere collector of plants once did. The geography of plants, or the knowledge of how they are distributed over the surface of the earth, has also come to be a very fascinating department of botany, and the investigation of their 'histories' in relation to altitude, climate, and even the relations of plants to insects, have come to be quite as much matters of botanical interest as the older studies which relate simply to the classification of plants!"

In a sketch of the proceedings of the British Association for the Advancement of Science, at its recent session, *Professor* Bayley Balfour, treating of Forestry,

"Went on to show that the practical aspects of Botany were not sufficiently considered now-a-days, that whilst chemistry and physics were turned to utilitarian purposes, botanists confined their attention too exclusively to matters of pure Science.

* * * * * * *

Botany cannot thrive in a purely introspective atmosphere. It can only live by keeping in touch with the national life, and the path by which it may at the present time best do this is offered by forestry."

To which, with its usual catholicity of thought and utterance, the *Chronicle*[1] adds, "If to forestry be added gardening, market-gardening, and agriculture, including vegetable pathology, we fully concur with the Professor."

Cannot our Hall be made to serve awhile longer?

In the early summer a note, whereof a copy is subjoined, was received by your *Secretary:*

"WORCESTER, MASS., May 29, 1894.

"*Mr. Edward Winslow Lincoln, Secretary,*
Worcester County Horticultural Society,

"DEAR SIR:

"The Committee of Arrangements having in charge the New England Fair of 1894, extend a cordial invitation to the Worcester County Horticultural Society to unite with them in

[1] *Gardener's Chronicle*, London.

making the Horticultural display at the coming Fair a credit to this section of the State. Much has been gained in past years by uniting at Fair time and holding a Joint Exhibition, and we trust the very pleasant relations of the past may be continued.

"Trusting the invitation may receive your favorable consideration,

"I remain, very respectfully yours,
"JOHN B. BOWKER, *Sec'y.*"

That invitation was laid before your Committee on Arrangements, etc., and its unanimous decision was officially expressed, as follows:

8: JUNE, A. D. 1894.

Mr. John B. Bowker,
Secretary of Worcester Agricultural Society,

DEAR SIR:

At a meeting of the Committee on Arrangements and Exhibitions, holden on the 7th inst., the Communication from the Agricultural Society, inviting co-operation at their next Annual Joint Exhibition with the New England Agricultural Society, was duly considered and, as a result, the Secretary was requested to reply that, in the judgment of the Committee, the Science and Practice of Horticulture will be better encouraged and promoted by the maintenance on the part of the Horticultural Society of its especial Exhibitions.

With the best wishes for the prosperity of your Society, permit me to subscribe myself

Very respectfully,
EDWARD WINSLOW LINCOLN,
Secretary.

Our own Exhibition was held, in due course, being crowned with signal success and receiving its due meed of praise from numerous strangers, well qualified to judge, who chanced to be in the City. It is understood that the New England Society also "filled space;" although in what shape Horticulture, Floriculture, and Vegetables finally crystallized, must be left for description by the pen of him who parted what God had originally joined together. In hope, if somewhat faint, of light

upon this vexed subject of Terræculture, and the proper display of its results, I have now for well-nigh a generation closely watched the achievements of that astonishing organization which annually folds its tents and silently steals away, leaving the sparse after-math to its local partner. But not even the New England Agricultural Society, with its unique segregation of Horticulture, Floriculture, and Vegetables, can emerge from its chronic chaos and, by mere advertisement or clamor, evoke new form and order in garden or orchard. We show nothing in this Hall, as all-around, steady going fruits, that will take the place of Baldwin or Bartlett! Are they more fortunate over by Agricultural Street, re-inforced as they are by the surprising co-operation of our most prominent Members?

The liberty of an individual to exhibit the product of his labor, or skill, when, where, and as he pleases, can only be curtailed by himself. Except by his own volition his action is free as air. Yet does he not himself impose a degree of restraint upon that natural freedom by the very fact of his affiliation with a Society! Is Horticulture exalted, by reason of Exhibitions elsewhere in Worcester! Then, by just so much are our own Exhibitions depreciated. Is Horticulture degraded, as it careers up and down our streets in electric cars proclaiming, through ophicleide and trombone, the speedy occurrence of "Five Great Races!" If aye,—how can we escape responsibility who participate in the downward steps, becoming parcel and part of the procession that tags after! Do we leave this Hall,—going elsewhere in search of reputation and cultural credit? Where else than here, outside of Suffolk County, could such solid horticultural renown be attained at any time within the last Half-Century! Do we reach out to get individual gain? It is to be hoped that our reward will not become Apples of Sodom; although, if purses are to be scaled down, the loss in such event would not be so hardly borne. Our abstinents and ascetics are invited to a board wherefrom whatsoever can cheer the heart of man is sedulously excluded; and those laborers in a vineyard without grapes, who are tireless in denunciation of wine or beer, face with neither flinching nor protest the

placards that confront them from every fence, whereof the whole space is let at so much per foot, to advertise—"Game-Cock! the King of all Whiskeys!"

The New England, or any other Society that may step into its shoes, misfits at best, comes to Worcester and squats upon an excessive tract of land in the very heart of the City, for which there is legitimate use upon a single week out of the whole year, and from which neither City, County, nor State collect a cent of tax. The silent and ostensibly virtuous partner,—the owner of that land, is a recipient of bounty from the State, taking Six Hundred Dollars ($600.) from the Public Treasury for work in part wherein, to say the least, it does not surpass others less highly favored. Upon that land, bought with fourpences and for which they have since declined an offer in "spot cash" of One Hundred and Twenty-Five Thousand Dollars ($125,000.), they profess to hold for purposes of mere lucre, exhibitions in rivalry with ourselves who throw wide open our doors to any who may choose to compete, or inspect. They claim that bounty from the Commonwealth, to lavish it upon the acrobat and contortionist, for which nevertheless they pay no license, as must every other circus; and for that bounty this Society pays an equivalent tax of Six Hundred Dollars, exacted because its first floor is leased, as it needs must be, to get some revenue wherefrom to defray current expenses. So far as the State of Massachusetts can accomplish it, there is an actual discrimination in money, against us who charge the community nothing, in favor of a Society that does nothing but charge! Not one of our talents is buried in a napkin or otherwise. And yet, theoretical protectionists as are most of this audience, I dare to challenge any one present to dispute my assertion that the whole effort has been for naught! To disprove my statement that, while Apples or Pears may have been shown out of season, and therefore immature and unworthy of notice by any Society that has a reputation to guard, the pre-eminence of the Worcester County Horticultural Society remains unimpaired,—scarcely even affected. And still,—of all this audience who occupy farmstead or grange, is there one who would offer

bob-veal for display,—let alone premium! But what better do they, whether in the line of example or precept, who submit for judgment and award on the fourth day of September, Anjou, Dana's Hovey, Bosc, or Lawrence! Effort without stint has been wasted in a rivalry that has once more approved itself futile. Means that could illy be spared have been literally thrown away in the purchase of horticultural appliances and furniture that, at best, would but feebly approximate our own thorough and ample equipment. Thrown away! I repeat, since we already occupied the entire field of Horticulture, had made adequate provision for its every need at Exhibitions, and hold ourselves ready in all earnestness and with the utmost courtesy, to fulfil our allotted task. So doing, we leave with those to whom they appertain the engrossing and responsible duties consequent upon an honest, whole-souled devotion to specific, time-honored Agriculture. There ought never to be rivalry, nor occasion for strife. The grievous load of indebtedness that weighs upon the Society by Agricultural Street, had its origin in ambition to do too much, fostered by the lying promises of men, who, as a class, are always ready to have others do for them. I know whereof I speak, having yielded to importunity and signed three (3) successive Deeds to land, to remedy incompetent surveys and eke out inadequate lengths of track, whereon the gelding might display a speed which he could never transmit! his owner obtain a field for training, in clamor for whose purchase he could not be too vociferous as, in contribution for its payment, then, as since, he was and continues hopelessly bankrupt!

As for the Society itself which, upon the urgency of D. Waldo Lincoln and O. B. Hadwen, had agreed to relinquish further attempt at Horticultural Exhibitions, you all know how that engagement is kept. Of itself, among the well-informed, competition with our Society appears as impolitic as it is, in fact, preposterous. If prosecuted from an abstract love for horticulture, it is labor lost that were better applied where it might tell to advantage. If persisted in for the sake of gain,—our own Society was long since compelled to abandon the custom of filling an ark with specimens of everything that could not be killed and would not

die; that only counted among the accretions of a dump which no one cared to see, which they certainly would not pay to look at; as, for years, they did not for a view of Strawberry, Rose, or Peach, in perfection. The WORCESTER COUNTY HORTICULTURAL SOCIETY early learned that people will not pay for admission to Exhibitions, however excellent, which they can behold duplicated, if in less degree, at every stall and window of huckster or florist. Will those very people go over to Agricultural Street and pay thrice as much for a sight of inferior specimens merged in a hotch-potch classification!

People outside the sanctuary are easily misled. What more natural than for them to conclude, if our own Members find this Hall inadequate for the advancement of Horticulture in its best accepted science and practice, that they also may do better to stay without its portals! Why should we not let other Societies, arrogant and pragmatical, lose themselves in the mists of pretentious sciolism; wherein clear judgment is befogged; or get ensnared in the nets of Mammon, in whose meshes they will surely perish! Suffer those who like to be blinded by a glow-worm, mistaking its flickering spark for the pure radiance that enlightens the world! But, for ourselves, why cannot we be content with assiduous devotion to that learning and practice wherein we are sure of the mastery? To that knowledge which will add somewhat to the delight of the human palate, and by so much augment the sum of human enjoyment! Your *Secretary* owns to but slight respect for a theory of existence which rejects every pleasure that is within reach, and largely because it is attainable; austerely declining to enjoy the present life, in a futile quest for positive assurance of another, wherein the further one goes the worse he may chance to fare.

We grow Flowers, Fruits, Vegetables:—none better! Others produce live-stock, cattle, sheep, turkeys for Thanksgiving; and to them we gladly concede superiority in their chosen line. There is room enough for either without jostling, if only each will keep to the right. In course of time, the several departments of Terræculture have become too large for a rigid administration under the lax nomenclature that is fashionable,—and

therefore current. We have no longer Cattle-Shows: they have been transmuted into Agricultural Fairs, — too often Fouls! That man is accounted behind the times whose memory reverts with pleasure to the Common and its general enjoyment, where all were welcome to a public annual Holiday;—the one with his quiver full as free from an onerous charge for admission as the youth at whom Cupid had just aimed. Where the side-shows tickled the groundlings, fooling even them but once; where there need be none of that fretful worry about the weather, since sunshine and shekels were not equivalent and the Governor could be counted upon to exhibit himself from interest in the cause and not for reasons of policy. We have lost our Cattle-Shows and in lieu thereof have the Half-Mile Track, the Fifty Thousand Dollar Debt; the weary despair of extrication from liabilities that, if achieved, would only furnish a new pretext for the imposition of additional burdens to stimulate and foster a practice confessedly hopeless, unless the Statutes can be altered so as to tolerate gambling. Conceding all that the wildest enthusiast may demand to the innate nobility of the Horse! Yet it is not as he is described in Job that he is paraded as a spectacle at an Agricultural Hippodrome. Who can detect a "neck clothed in thunder" when the mane is sheared, the hair clipped, the tail docked, and the feet clamped in boots! The whole pretence that the modern trials of speed conduce to an improvement in the breed is dissipated, when you reflect that, oftener than not, the competitors are geldings, and that invariably every possible appliance and trick is employed to gain even the slightest advantage. From all the racing counties of England comes up the universal wail that production of Horse-Flesh tends to degrade and ruin all concerned in it. In this doleful cry farmsteads and grange concur, as in nothing else, that, since the latter-day cult of devotion to pedigree, and servitude to unnatural speed, of two animals at either end of the halter one may be a horse, but the other is invariably and inevitably an ass!

I may be old-fashioned in my notions, but I honestly date the decline in New England Farming, far more than from any or all other causes combined, from the surrender of the Ox and the

substitution of the Horse. Note! that I do not overlook the prosperity of the Market Gardener, who deserves the good fortune for which he labors diligently, but which after all is largely attributable to the propinquity of his customers. *But that is not farming!* Nor do I forget the Dairyman, to whom pasture and silo are subservient, yielding the year around a copious supply, which, at current prices, strips alike customer and udder. But milch-cows do not comprise every "beast of the forest," nor were they exclusively in the vision of the Psalmist when he beheld his "cattle upon a thousand hills." It is fancy-stock bred to a pedigree, salable for an excess that becomes a fault and not especially prized as material for beef. Intensive agriculture might redeem the wasted soils of New England far better than by their abandonment to the invasion of white-weed and whiter birch. But it must be an agriculture that produces the Ox and his carcass, that profits by the saving of his manure whereat it is so fashionable to sneer when so-called fertilizers seek a handy market; and which puts that manure where it will do the most good,—composted about and above the roots of Baldwin, Hubbardston, and Greening. The fruit that will never lack purchasers is such as that to which our accomplished judge awards first premiums. The yield from a whole orchard may not be the like; but neither need an orchardist demoralize a market and ruin his own reputation by attempting to doctor or deacon by misuse of defective specimens. Superior samples of first-class Apples or Pears, grown in this County, may as well be exchanged for the English Shilling as await the slow haggling of local dealers, who are flustered at sight of a barrel and are apt to pinch a dime hard when there is a glut of produce. Grow worthily what you can, converting to cider or pork all that is fit for nothing else.

Is it our wish,—is it for our interest,—and shall it be our aim,—to advance that most important branch of Horticulture—Pomology? A.D. 1893–4, during the year just passing away, we have had no apples for domestic consumption. Even our original mother Eve would have escaped temptation, had she been obliged to look upon a peck of defective and half-decayed Rox-

bury Russets, as did your *Secretary* last March, for which the dealer asked seventy-five cents, with a cheek that looked as if it never knew a blush! We have known what it means to endure an apple-famine. A.D. 1894–5, our trees bend beneath their burden and there threatens to be a glut in our supply. Meanwhile there is a dearth in English orchards, and a large foreign demand appears eager and quick to take what we can furnish in abounding excellence. Always assuming that there is no unpardonable sin in exchange of produce, or barter if you prefer the term; and that there is no lack of patriotism in freighting a ship with the fruit of our orchards, securing a profitable voyage by returning with a paying cargo adapted to our needs. To cite a somewhat famous phrase: "it is a condition, not a theory, that confronts us." We are likely to be overwhelmed by the superfluity of our noblest fruit. Do the frugal orchardists whom I see around me expect to find ready to hand a home-market insatiate—omnivorous? Can any employer, as he reduces wages by one stroke of his pen, create a single new stomach or enlarge the aching void in those existing? If so, well;—for thereafter they may perhaps try to supplement the processes of Nature, aiding her work by augmenting still more that bounty to which our indolence is indebted in usual happy-go-lucky fashion! Our old trees are bearing once again, and there is prospect of a market for what they yield. But did we prune, thin out, manure, do anything in fact, but

"Sitting on the stile, Mary,"

attune our most lugubrious tones to that most shiftless of all refrains—"The Lord will provide!" Will He indeed? If you neglect planting new trees in virgin soil, just wait a few years and admire His provision! But watch and take heed what He will do for you after your old trees are dead from exhaustion, perishing from that very excess of bounty whereon you lazily depend; when your new orchards fail to come into bearing, since you declined setting them out, in the fancy that apples had ceased to be factors in human temptation. Or, worse and more discreditable still, because you would not plant that only posterity might enjoy. And then, degenerate descendants from men

who tamed the savage Indian and a more savage wilderness! fold your arms and look on, as train after train crosses a wide continent and a stormy ocean to deposit its luscious burden in that opulent market which we should have long before forestalled! Ought we to feel assured of a crop in the year to come, resting idle, toiling not, nor sweating to turn a hair in mid-summer heats when thinning should not be denied? Shall we utterly decline to plant new trees, as did our fathers, upon the produce of whose tireless industry we are content supinely to vegetate! Are we satisfied to exhaust our principal, consuming its substance?

Commenting upon the actual results from export of almost every variety of Pears, Plums, Peaches, Grapes, &c., &c., from California, that grand exponent of all forms of approved Terræculture—the *Country Gentleman*—declares that "the experiment is a success; and has demonstrated that California can furnish Covent Garden market with fruit just as well as the Isle of Jersey, and at prices that admit of profitable competition." And then the Editor, writing with all the shrewd sense, if not with the actual pen of JOHN J. THOMAS, enlarges forcibly upon the text that I have so often striven to impress upon the Horticulturists of this noble old County of Worcester, whereof the superiors throughout our broad Republic may be counted as the Saints in Sodom:

"Do the fruit-raisers of the East intend to permit the Pacific Slope to monopolize this export trade? If not, it assuredly behooves them to improve enormously the average market value of their own product, by more vigorously fighting their fungous and insect foes, more liberal thinning of the crop as it grows, more unflinching rejection of all imperfect specimens from what are supposed to be standard-grade lots, and much more careful handling and packing. We saw last week at Syracuse, California pears and peaches bringing from *seven to nine times* as much money as those raised in the great fruit regions of central and western New York, not three hours from the retailer's shop; and, what is worse, the California fruit was worth the difference. The specimens were of very uniform size, every one perfect, and so carefully selected and packed that the dealer said he never lost a single one by rotting. The New York lot was of

all sizes and all degrees of imperfection in form, and disgraced by a very considerable proportion of rotten specimens. And as to flavor, the California peaches in their beautiful condition far excelled the great majority of the others; and the California Bartlett pears were in no manner inferior to any Bartlett pears grown anywhere. Let not the New York orchardist flatter himself any longer with the antiquated idea that California fruit is 'good only to look at and to sell.' It is infinitely better to eat than is an appallingly large proportion of the stuff that he insanely sends to market to compete with it."

So much for intrinsic excellence and its marketable appreciation! That selection counts as well, human if not natural, you may judge for yourselves when you note this variation in price of different lots of apples, as quoted September 24th, ult., in the English prices current:

Baldwin, ...$2.52, ...$3.84:
Greening, ...$2.64, ...$3.12:
King, ...$3.12, ...$5.76:

Can we not spare our Kings, if they are so badly wanted and so highly valued? A month later, October 23d, when consignments were coming in at the rate of 100,000 barrels weekly, quotations were as follows:

Baldwin, ...$2.68.....*a* $3.28:
Greening, ...$1.70.....*a* $2.92:
Northern Spy, ...$2.31.....*a* $3.53:
King, ...$2.06.....*a* $3.40:

The prices-current circular adds a pregnant commentary,—"the demand is active for sound and good quality, but the large amount of inferior stock injures the market for better goods." It may not fall within our province, as a Society, to undertake the regulation of international commerce in apples. But it is clearly our duty to take note of abuses that threaten to impair, if not ultimately destroy, a market for our superabundant stores of fruit which, if thrown back upon our hands for any reason, would effectually swamp trade at home. Should not our orchardists take some concerted steps to ensure honest packing, which lies at the foundation of all upright dealing? Your *Secretary*, agreeing with Jefferson that "the world is governed too much," would

be the last man to invite interposition by the State. Yet, if self-interest will not dictate and compel an honest count, quite as essential in commercial Pomology as in current politics, it may be well worth considering whether public inspection should not be exacted and enforced, alike in the interest of the Commonwealth and its individual citizens, as to conserve the fair repute of the County of Worcester!

A problem that often recurs to your *Secretary*, as he watches our Weekly Exhibitions in their unfailing sequence, seems to him one that deserves your serious consideration. Does specification constrict the ambition of our members? Do they confine their effort within the rigid conditions and limits appointed by us in our Schedules? We invite competition between certain classes of Flowers or Fruit, designating by name the varieties that we wish exhibited. Our members respond; sometimes offering twenty or thirty lots of each stereotyped, preferred kind. What else do they grow; if aught, so far as the Society is informed! May we not, unintentionally, discourage the introduction of novelties of standard excellence, that would challenge notice and merit study! Before the formation of this Society, individuals were thrown upon their own resources, having to find out as best they might, if Bartlett or Baldwin were worth cultivation. Vision and judgment were not aided, year after year, by a proffer of premiums to the amount of Three or Five Dollars ($3.00 or $5.00), for graded dozens. Now, naturally enough, it is not surprising that our judgment should be accepted without dispute—our election admitted without cavil or hesitation. Indeed, were such not the case, it might well appear that our Half-Century of corporate existence had been wasted. Unless, in all these years, we have achieved a solid reputation for knowing what is most worthy of being grown in this our County of Worcester, whether it be of Flower, Fruit, or Vegetable, we may as well acknowledge that our efforts have been misdirected, and go out burying our inadequate talents in the first cabbage-leaf that will serve for their shroud.

But if we have actually established our title as a Society which has attained its aim in howsoever insufficient measure, thereby

"advancing the Science and encouraging and improving the Practice of Horticulture," is it not manifest that the path which we blaze is likely to be the track of the aspiring novice,—the preference that we indicate become the choice of all who seek for a guide and find it in our acts and declarations! Are they likely to go astray! Or will they strike out for themselves in pursuit of newer Hesperides;—in less perilous quest of more modern apples. And therein is the basis for a contention that, if you place implicit trust in your Judges, you might as well confide to their decision the entire matter of pecuniary awards. For their name is legion who believe that our present system is defective in that its operation is largely contingent upon human frailty. Is it the intention of the Society when it invites competition, in a certain manner and under explicit conditions, to bestow marked favor upon those who refrain deliberately from open competition? Indeed, how can you expect honorable rivalry when malingering gets the same reward as faithful service! Were the judges authorized to confer substantial recognition for meritorious exhibits, presented without being invited in your Schedule, it is likely that as exact justice would be meted out as now. Yet even Angels might well hesitate to act as umpires in our earthly rivalry; and, as we cannot command angelic judgment there is slight hope for amendment in future. But still is production of Baldwin or Bartlett to be forever classed with Infant Industries, to be pampered and petted, for all time, as throughout the Half-Century last past! The *Country Gentleman* recognizes the difficulty of finding varieties of fruit that will suit every locality. It reproduces that old chestnut of about all pomologists of note, since Marshall P. Wilder with his Vicar of Winkfield, that he would plant 99 out of 100, of his especial pet, rounding off the century with one more of the same, by attributing it to a distinguished orchardist of Western New York who thus advised exclusive culture of the Baldwin Apple. Still, to illustrate "how much that variety has gone back," it cites the opinion of a Canadian orchardist who stated, in a public address before tbe Fruit-Growers of Ontario, that "the R. I. Greening was coming up to the Baldwin and would pass it." But the

question with us would seem to be,—Have we not already lost assurance of the Greening in its pristine perfection, and is there permanent redemption for the Baldwin from manifest degeneration and intermittent fruition? Yet, hark! was not that a voice from Mountain Street, intoning in low, harmonious bass,—eyes have you, oh *Secretary!* and seeing, cannot behold, those Thirty-Four (34) superb dozen of Greenings, on the 18th of October, ulto.; or, a week later, that equal, unparalleled display of Baldwin! Precisely! and because of those wonderful exceptions to a mediocrity almost invariable do I urge my contention. Can you tell, oh self-satisfied Granger! why those Apples were borne, in this especial year, of such surpassing excellence and beauty? Did you contribute aught to it, whether by bounty of manure, by reduction of excessive fecundity, by doing anything, in short, that may fairly be claimed to have brought a blush to their cheeks or augmented their soil and substance? Can you feel confident that you will ever look upon their like again, except as I before hinted, under the fatuous conceit that the Lord will provide! Has He not just shown you what may be, to profit by the lesson and thus ensure that it shall be? Would not all buyers like to obtain such fruit, instead of the inferior or defective specimens usually found on sale; or, as throughout the last year, none at all. Vegetables, within the observation of the writer, have so improved; skill in their cultivation has so highly developed; that it would almost seem as if further advance were beyond attainment. Does any one labor more diligently than the market-gardener, or show better returns for his toil expended! Does any one work less assiduously than the average orchardist, who regards suckers as inevitable thieves: who has known the caterpillar from boyhood and has come to look upon him as a member of his household; and who will be sure to flatter himself, because of what he has seen in this Hall, on the 18th and 25th of October, ult., that his cellar will be filled to repletion if only he has a ladder and can get enough barrels. Only, why go to the trouble of climbing a ladder when, to him who waits, will come windfalls!

Are we not, insensibly perhaps but nevertheless surely, degrading the standard heretofore established in our schedule? Doubtless the later we live the more opportunity is furnished to learn. But are all the lessons set before us worth learning? In our selection of Pears, for example, as the years have rolled by, we eliminate native and long-tried varieties, or else reduce them to a lower level than that wherein they had long approved themselves worthy. Marshall P. Wilder died in the faith that the surest prospect for the development of excellence, whether in the Apple or Pear, would be found in the careful cultivation of native kinds. Yet we have no room for the Columbia, barely tolerate the Dix, and regard the Washington as pretty waxworks! Now the Dix is as good as Louise Bonne, which it succeeds, keeps later, and is well worth waiting for if wait you needs must. People ask for a later-keeping Winter pear and are put off with suggestion of this or that, hard to grow and harder to ripen, while all the while the Columbia is at their service. Of foreign varieties, Marie Louise, one of the three very best abroad, gets faint recognition by dint of earnest championship. Winter Nelis is rated below those egregious humbugs, Angoulême and Clairgeau, whose girth, or flaming cheeks, should not suffice to maintain them in cultivation. So much do I esteem the Nelis, although I fail to earn its premiums; and so thoroughly do I believe in each Member of our Society extracting from its original package his Thanksgiving champagne; that I recall your attention to the opinion of Andrew J. Downing who, in his original work, Ed., 1847, says:

"The Winter Nelis holds in our estimation, nearly the same rank among Winter Pears that the Seckel does among Autumnal varieties. We consider it *unsurpassed* in rich, delicious flavor, and indispensable to every garden however small. It is a very hardy and thrifty tree, and bears regular crops of Pears, which always ripen well and in succession."

You may have noted that I mention enjoying it at Thanksgiving, when most of us must, if at all. Yet John C. Ripley and John C. Newton, with suitable fruit-rooms, found no difficulty in keeping the Winter Nelis in perfect condition until the

May following the time of picking. As to the quality of the pear, Mr. Downing's opinion describes it as truly now as when it was uttered. That it is an "ugly duckling" may not be disputed. The specimens shown in our Hall of late years have been very inferior. On the other hand, none could be better than those exhibited October 25th, by Mrs. Mary E. Woodward. If the tree that bore them is young, is located in the open, and has received proper care, as is understood, the lesson is obvious and requires no commentary.

Describing the Columbia, which originated in Westchester County, New York, and which he illustrates by a colored plate, Downing says:

"This splendid American pear is one of the most excellent qualities, and will, we think, become more generally popular than any other early Winter fruit. It is large, handsome, very productive, and has a rich, sugary flavor resembling, but often surpassing, that of the Beurrê Diel."

Times without number have I been asked to recommend some Winter Pear. The task was too difficult. But why should I hesitate to recall to your attention the opinion of our very highest pomological authority, re-inforced as it has been by the observant experience of the few of our Members who have profited by following his judgment! Bear in mind that it is commended as a Winter pear! which implies that it must be suitably kept and properly ripened. Individually, I went much further and fared far worse. Instead of Columbia, Duchesse de Bordeaux cumbers my grounds,—a fruit which I would gladly contribute to swell that fragrant deposit over which perfumed zephyrs blow to the delectation of our friends on Shrewsbury Heights. And finding ourselves in sight of "Shrewsbury Clock," it matters little by what zephyr borne thither, shall we dismiss mention of that remarkable display of *Lawrence*, October 25th, by our valued associate, Mr. Oliver B. Wyman? Yet, after all, what did we learn? We saw pears that none of us could rival, nor even approach in excellence. But who knows under what conditions those specimens were produced! Was the tree young, or old; has it been highly manured, or let severely alone? Was

it suffered to bear an exhaustive crop, or was excessive fecundity checked, or reduced? These are all considerations to be weighed carefully. Still, that they may be so weighed, they must first be precisely known. And how little time do any of us have, in the hurry and rush of that final Autumnal Exhibition, to put questions, or to ponder the value of answers! Yet would not all who possess trees of that variety prefer to grow pears like those of Mr. Wyman! All this possible inquiry, all this positive dearth of exact intelligence, oppresses the mind of your *Secretary*, as he reflects upon the responsibility that rests upon this Society by the simple fact of the relation it has voluntarily assumed. Shall we advance the Science, and encourage and improve the Practice of Horticulture; or shall we continue stolidly in a customary rut, content to pocket premiums and alert to grumble at the judges who determine their award!

The profuse award of gratuities, in the Floral Department more particularly, would seem to challenge your attention and invite your interposition of a check. It is eminently proper to recognize special displays of surpassing excellence, from places so far distant as Whitins or Indian Orchard, illustrating as they do the progress of discovery and the benefit of practical instruction by object teaching. Yet they are alike inappropriate and a waste of resources that should be administered frugally, when they are applied as soothing syrup for defeated competitors, or rubbed in for balm in the case of some who are being taught to regard Horticultural Exhibitions as a source of material gain. This, at least, must be conceded, that when the award of gratuities amounts to $137.00 in a department favored with an appropriation of $700.00, besides the special assignment of $200.00 for Chrysanthemum, there is imperative need to call a halt! Vegetables, in their manifold forms of utility, and as long ago as the first Roman Secession Menenius Agrippa demonstrated the absolute necessity of provision for the belly, get but $300.00 from our treasury. In no other department of our work is there such decided evidence of advance in the practical application of Horticultural Science. In none do our appropriations show less evidence of actual appreciation. Even

fruit has been made to halt behind, with laggard pace. Your *Secretary* is yearly more confirmed in the opinion that the Society would do more to promote its legitimate aims—advancement of the Science and promotion of the Practice of Horticulture, by dismissing all thought of what may attract a throng of yawning spectators, and limiting its attention and efforts to its peculiar province of encouraging origination and growth of the best Flowers, Fruits, and Vegetables. A crown of Parsley excited keen rivalry in ancient Greece; and was the sole, but dearly-priced, reward of the victor in the strife for superiority at the great national games. Yet I anticipate the prompt retort that the Greeks were heathen! and had not learned to propitiate Mammon when they let out contracts for the erection of altars to unknown Gods!

A generation has passed away since the Royal Horticultural Society of England was induced by plausible assertions, to form an alliance with the Crystal Palace Commission whereby it became bound to hold its Exhibitions at Kensington, subjecting itself also to other onerous conditions. From that date commenced the decline of the Society's prosperity and the almost complete paralysis of its useful functions. Before, it was active, full of healthy vitality, was accumulating a reserve of funds and possessed troops of friends. Thereafter, it hired bands of music, offered superb displays, catered for the London Four Hundred and, having its labor for its pains, surely, if by degrees, sank into a hopeless abyss of insolvency. Within a few years past it has striven to extricate itself from its entanglement and only recently was it able to discern the first faint gleam of light. Now, it has put the Tempter behind it, confining its efforts to the advancement of Horticulture, pure and simple. It exhibits what it has grown, holding out no meretricious allurements. It plays no more upon a harp of a thousand strings, piping unto those who will not dance! but limits its harmony to the concord which is evoked by common devotion to a consistent, settled purpose. And Fortune is beginning to smile upon it once more. If you ask me why I allude to this episode in the history of a strange society, in a foreign

land, I reply to you Horticulturists of Worcester County! *de te fabula narratur.* Beware lest history repeat itself! You are treading like paths in your Chrysanthemum Exhibitions, pulling chestnuts from the fire for others, and burning your own fingers in futile attempts to rival the ambitious displays by professional Florists, whose trade it is to cater to each whim of fashionable society, which dissipates its languid energies at shows of horse or dog, and spares perchance a moment's thought to the gorgeous, scentless marvel from far Cathay. As such shows cease to be even a nine days' wonder, constituting but a passing fashion, is not our longer participation in them, at a loss which we can ill afford, the merest folly! For culture of the Chrysanthemum, unlike that of the Rose, is not and can never be engrafted upon the common, everyday horticulture of Worcester County. For the advancement of such horticulture—the promotion of the growth by people generally, and not by a special, technical class, of every desirable flower, fruit, or vegetable, was this Society originally instituted. Only by keeping that purpose constantly in mind can the Society be perpetuated with usefulness to the community and credit to its members.

All which is Respectfully Submitted

[by]

EDWARD WINSLOW LINCOLN,

Secretary.

Horticultural Hall,

Worcester, Massachusetts,

November 7, A. D. 1894.

OFFICERS AND COMMITTEES
OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1894-95.

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VICE-PRESIDENTS:

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ON LIBRARY AND PUBLICATION:

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President Parker, and *Secretary* Lincoln.

AUDITORS.

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JUDGES.

ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
Albert H. Lange.	James Draper.	Charles Greenwood.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

A. D. 1893-94.

PART II.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY.

11th January, A. D. 1894.

ADDRESS

BY

HON. HENRY L. PARKER, PRESIDENT.

THE opening address was made by the President of the Society, Hon. HENRY L. PARKER. It was informal in its character, and his topic was the "Condition and Needs of the Society." After discussing the financial position and the work of the past year, he said:—

What we most need in the immediate future, in my own judgment, is to increase the efficiency of our library, by making its contents better known and more readily accessible, by completing valuable sets of books that are now incomplete, like the Transactions of the Royal Horticultural Society, Curtis' Botanical Magazine, Icones Plantarum, and others that might be named, and by the addition of such books of recent publication as will make the library up with the times in scientific research in our special department. I do not intend by this any criticism of our Library Committee. They have doubtless done the best they could with the sums they have felt warranted in expending. I am simply calling attention to what seems to me a pressing need, as soon as the condition of our treasury shall admit.

We are accustomed to speak of our library with great pride, and to call the attention of visitors and strangers to our many rare volumes, elegantly illustrated, which we affirm cannot be

easily duplicated, and yet there are many works of a more ordinary character on special subjects relating to Horticulture, which if called for by investigators of those subjects we should be unable to produce. We have not by any means as yet a complete working library.

Hardly any addition to our library of greater value could be made than a complete set of the publications of the Agricultural Experiment Stations, with an index or catalogue. These publications, printed by the Government, might be had presumably for the asking, and a key to a subject-index of this literature could be obtained, on the same terms, of President Goodell of the Agricultural College.

Of hardly less value are the Smithsonian reports relating to botany and horticulture, and the entomological works of C. V. Riley published by the Government. Most, if not all, of this literature could be obtained through our Congressman or Senator, and would be, properly and systematically arranged and cared for and catalogued, of inestimable value.

A card catalogue should be made, not only of subjects and authors of all the books, but of all the plates as well. A library without a catalogue is like an army without a system of military tactics. These plates of plants and flowers upon our shelves, contained in the Floral Magazine, Curtis's Botanical Magazine, the Revue Horticole and the many other series of books, are an exact reproduction from nature, in color, size, and form, accompanied with a history and description, and yet are of little practical value, because they can be found only by a long and tedious search. Such a catalogue of plates would offer an incentive to an increase of membership, which should go a long way towards defraying its cost.

Under the new course of study just adopted in our schools, elementary instruction in natural history, especially botany, is recommended—beginning with the lower grades. Our teachers would find these plates, if made accessible by a catalogue, of invaluable service.

But primarily they should be made of service to our own members, and if thus made accessible, they should create or

stimulate botanical investigations or the study of vegetable physiology. Could there be a wiser expenditure of money? Of course our own librarian, with his manifold duties, could not undertake such a work, nor could such an enterprise be carried out at once. It would need extraneous help and would be the work of years. The Massachusetts Society have such a card catalogue, begun several years since, which is now well on the road to completion, and, if I am rightly informed, the annual appropriation has been only $100 for the purpose.

Again, a Society like this should possess a herbarium. The nucleus of one the Society can have at any time by accepting the offer of a member of the Society and complying with the condition imposed by him. That gentleman, perhaps the most accomplished botanist in this city, has offered to us his pressed and mounted and complete collection of the flora of Worcester County, on condition that the Society provide a suitable receptacle or, in other words, a glass case. If want of *room* prevents compliance with the condition and consequent acceptance of such a munificent offer, then the sooner we pull down and build anew the better.

Experimental Work.

I have, on one or two former occasions, suggested the feasibility of the Society sometime in the future engaging in experimental work of some nature. Exactly in what manner would be a matter of detail. It may be a serious question whether we should feel warranted in ever pursuing an independent line of action, but much botanical and horticultural work has been done in other localities in coöperation with other similar lines of investigation. The Arnold Arboretum is run in connection with Harvard University. The Shaw Gardens and Washington University, at St. Louis, were found to be of mutual benefit to each other. In fact, a class-room study of botany, however important, is but half the work. This must be supplemented by a study of plant life with all its adjuncts. And here the line of investigation runs closely alongside those of other sciences. It involves chemical analysis—the use of the microscope—entomological investigation.

For example, one of the most interesting and astonishing discoveries in botany, and a very recent one, was made by the eminent entomologist C. V. Riley in the line of his own work, and was that the Yucca plant, a plant belonging to the lily family, is fertilized not by insects in search of food, but by a single insect—a moth, belonging to the genus pronuba—called the yuccasella moth, for the sustenance of its young. This moth gathers the pollen from the anther by the aid of its tentacles, rolls it up into a ball under its head, often three times the size of its head, and holds it there with its tentacles. It then flies to the pistil of the flower, pierces it by its ovipositor, a lance-like organ which projects from the tip of its abdomen, lays its eggs through this opening and then runs to the top of the stigma and, by the aid of its tentacles and its tongue, forces the pollen down the stigmatic tube. These eggs hatch in about ten days and, as the fruit swells and grows, the larvæ live upon the seeds. As the fruit ripens the larvæ bore their way out, descend to the ground by a spider-like thread, bore into the ground a few inches, remain there in a chrysalis state and, in the course of time, come out again as moths.

The investigations which led to this discovery were made in the Missouri Botanical Gardens, formerly known as the Shaw Gardens, at St. Louis, and these investigations were afterwards continued by Prof. Trelease, Director of the Gardens.

Two of the most valuable of the works of Charles Darwin, viz.: "Insectivorous Plants" and the "Fertilization of Orchids," were the result of his study of insect life in the Gardens of Kew.

I might cite here also, as another illustration of the interdependence of the sciences, that the discovery of the theory of the cellular animal tissue originated from the discovery of the vegetable cellular tissue. Schleiden, the great German botanist, first established the fact of the formation of cells in plants. Schleiden, soon after his discovery, met Schwann, the perhaps equally eminent physiologist, and told him about it, and they discussed it together, over their beer. As Schwann went home, the thought occurred to him, if plants grow thus why not animals, and following out this thought he made experiments and investi-

gations which resulted in establishing the doctrine of the cellular animal tissue.

It is possible that the future may develop some scheme by which we might coöperate with some other society or institution in such experimental work. It is possible that State or governmental aid, which has been rendered with a lavish hand to agriculture, may be extended to a kindred science, which is hardly less a factor in economics. It is possible, that upon the strength of such coöperation, as a condition, an experiment station might be secured at Worcester.

At any rate the idea of experimental work is not a new one or original with me. Mr. Wm. G. Strong, ex-president of the Massachusetts Society, says, "the idea of establishing an experimental garden had engaged the minds of the leaders of this Society from its organization. The matter came up again when the improvement of the Back Bay lands began. Some thought that available space might be secured there, but before any definite plan could be decided upon, the opportunity passed by. We are occupying too expensive a home for our work and yet have too little room."

Mr. Francis H. Appleton, of the same Society and in the same discussion, said that "every member should consider seriously whether the Society is using its means to the greatest and best advantage by keeping them locked up in this land and building. If it shall become possible in the future to add experimental gardening to our work, or to join in any practical way with an established garden, he thought it only reasonable to believe that the Commonwealth might be disposed to entrust funds to the Society—whose objects and evident purposes were to be progressive—to directly promote the public good by practical effort to develop horticultural science."

I believe that sometime the opportunity will be presented for such experimental work, on either a coöperative or independent line. It may be many years before it comes. Till then, we need to keep our enthusiasm alive, and ourselves awake and abreast of the times. Making the best possible use of present means, and ready to grasp and avail ourselves of such opportunity when presented.

18th January, A. D. 1894.

ESSAY

BY

Rev. W. T. HUTCHINS, Indian Orchard, Mass.

Theme:—Sweet Peas and other Flowers.

Talking with Mr. Clark, of Peter Henderson & Co., last summer, we estimated that 100 tons of Sweet Pea seed were sold in this country last year. I think now that will be more nearly the correct estimate another year. Our large seed-houses now handle it by the ton. Burpee had seven tons last year, and will have about the same this year. One Pacific grower grew 30 acres of Henderson's New White, making about three tons of that alone. One Pacific grower will have 200 acres of the various sorts this year, and the other will not be far behind. I should estimate that all the other growers of Sweet Pea seed in this country will make 150 acres more. The aggregate product, if we have a good season, ought to be about 55 tons, or 200 pounds per acre, which is but the beginning of this new business in our country. Last year the English supply gave out and they cabled to Burpee for all he could spare.

It seems rather anomalous for a grower to be shovelling out three tons of one variety and to be paying $5.00 per 100 seeds for another variety, as they have been glad to do for several of Eckford's new sorts which I have just sent them. This represents the two polar facts in the progress we are making in floriculture. I dare not estimate what the demand is to be in this country, for I am constantly hearing of amateurs and private gardens where the Sweet Pea is grown almost as abundantly as the culinary pea. And as soon as people master the few difficulties in growing this flower, they want to revel in them and supply the whole neighborhood. What will even 1,000 acres of Sweet Peas be for this country's supply? It will be about one-quarter of an ounce to each family. A large estimate of

what we shall grow this year would be only one-eighth of an ounce for each family. And yet I know of private gardens where more than a pound is planted. We get an idea of what the business is from the fact that Henderson had 30 acres of Emily Henderson, a crop of about three tons, none of it being offered this year to the trade in more than ounce packages, and at 50 cents per ounce to the public.

We are sorely tried with Mr. Eckford, and are trying to Americanize him in his ideas of getting seed stock into our growers' hands so that our flower public can get his gems in some reasonable time and quantity. We ought to have at least enough stock this year of what he offered in England last year to give people a taste, but the few ounces that could be grown from sealed packets of 10 or 12 seeds last Summer must all be kept for seed stock, and even a house like Burpee's cannot offer a packet till another year. Eckford's Scotch blood must be slow or he would catch on to the Star of the West. He might have put an ounce of Blushing Beauty, or Venus, or Firefly into our growers' hands two years ago, and the crop would have been 100 ounces the first year, and 600 pounds the second year, and that crop would be worth at the English price per ounce to-day $4,800, and if the same had been done with the six novelties, which, though now old to me, have not been seen by many of you, would have made a value of $28,800. I think it would pay Mr. Eckford to be less shy with his beauties and get them into our trade. A pound of Lady Beaconsfield, Lady Penzance, or Stanley is worth to Mr. Eckford this year, in sealed packets, $320. Morse of California would be glad to make 100 pounds of that one pound in one year, and it would be easily worth $8 per pound another year. I do not believe Mr. Eckford is making money as fast as that by keeping us waiting. Our California growers have a wonderful soil, remarkably sure in its results.

The interesting points of this flower are just dawning upon the American public. I am not a special pleader, nor do I let my enthusiasm run away with me. The Sweet Pea has always borne a happy kind of popularity for its artless beauty and sweet fragrance, even in its old plebeian form. But now, with every old variety carried up to the improved form and size, and the new colors and shadings added to the list, until we have 80 or more varieties of real merit, it challenges the attention which you are giving to it at this hour, and I sincerely congratulate any one who feels the thrill of the pleasure which this flower is to afford our American lovers of flowers.

Though Mr. Eckford is slow and keeps us about two years behind the times, there are other points that I can report upon to-day with great good cheer. In the first place we are getting ready for happy times. Our large seed-houses have now found out that in handling Sweet Peas they are handling a flower which, probably more than any other popular flower, comes true to name from seed. You do not get all colors from one pod of Sweet Peas, as you might from pinks or chrysanthemums. Here is an annual, each seed of which, as a rule, produces its own distinct variety. So true is this that it is extremely difficult to cross varieties and get any direct result. From the very construction of the closed keel, and the fact that each blossom fertilizes itself when two-thirds open, the pure blood of each variety, with peculiar exclusiveness, flows on in an established strain, and you get from a reliable packet of seed the thing you expect from the name.

Now our seedsmen have sold a great deal of cheap mixture, and I have no doubt many of them have been skeptical about keeping the varieties distinct, and the new varieties have been coming over from England so fast that we have not kept pace. And then a few big seed-houses, perhaps, get Mr. Eckford's own seed and description of his varieties, but they are too busy in passing their seed along to go into particulars, and so the catalogues of the country put in their own "hit or miss" description of varieties, and in buying you are as likely to get Black for Boreatton as anything. Then the *growing of seed* is new in this country. It is only about four years ago that they disputed with me in Boston about growing Sweet Pea seed in America. I thought it could be done, but did not anticipate the success of the California growers. Now some of you doubtless did not feel very cheerful last year to find that the plump California seed did not always come true to name. They, too, have been groping in the dark, and I can tell you there will be disappointments again this season in the seed we shall buy this Spring. I can almost tell you what you will get from every package of seed, for the bulk of the seed sold here this year will be American. It is splendid seed, but it is going to take our growers one year more to get their lists down to accurate descriptions. And that is one word of cheer I bring. The first of May I expect to visit California, at the invitation of Messrs. Morse & Co., and assist, so far as I am able, in vogueing their entire crop of Sweet Peas. This is both a generous act on their part, and a genuine indication of their wish and purpose to send out hereafter only such seed as is true to name. The present year will begin an

era of reliable American seed covering the entire list of Sweet Peas, and the best thing about it is that we can supply every one with the finest varieties at a figure that will indeed make it the people's flower. I shall not give away wholesale prices and seedsmen's secrets, for the infinite details of the seed business make it worth ten cents to put one-fourth of an ounce of reliable seed into your hands, although the grower's price, and the wholesaler's price, and the florist's scale price are a long ways off from that. The growers will pay $5.00 per hundred for seeds of novelties this year, and in two years the retail price will put it into the stock of every florist. Mr. Morse, with his 200 acres of Sweet Peas, writes me this week that last season he had just *two seeds* of Emily Eckford. I suppose that is all that he made germinate from one of Mr. Eckford's sealed packets. I sometimes fail on an entire packet, and sometimes get three plants; but the second year's seed seems to be all right. But America will revel in this beautiful flower, for we can supply the world with seed. And there will soon be no excuse for any seedsman offering to his patrons a packet that is not true to name. And besides the three or four varieties which are of American origin, we have other original varieties in the works, and shall more likely be troubled with too many than too few.

And let me say I am especially pleased at the probability of all our seedsmen recognizing a standard list. Now is the time to do it before we get wild over new American varieties. And, certainly, since the Sweet Pea comes true from seed, there is no reason why our entire seed trade should not respect the standard list up to date, and as fast as new varieties of real merit are offered they ought to expect to be recognized by the trade only so far as they have been certificated by some society or association.

Now take the present status of the Sweet Pea. I hope soon to know the history of every variety. I think I can say I have confidence in 76 distinct named varieties, not counting my own. Of these, just 49 are Mr. Eckford's, not counting his Queen of England, which is the commonest kind of a white. Seven of the very latest Eckford's have been seen in England, but not here. My familiarity with all his varieties up to this year leads me to have confidence in his new ones, though I fear we shall not see them even this year. The 49 Eckfords that are distinct certainly give him the lead on this flower.

Mr. Henry Eckford of Shropshire, England, is a specialist, more particularly in developing the Sweet Pea and the culinary pea. He is also at work on pansies and cinerarias. Some of our latest culi-

nary peas are from his hand. He is an old Scotchman, and loves his Sweet Peas. About 18 years he has been patiently at work on this flower. For seven years he got no result, and was told by florists he could not improve the Sweet Pea. Besides carrying the old varieties up into improved size and form, he has given us some remarkable new colors and set this flower forward on its way to unlimited improvement. Early in the season of 1893 he sent out a price list offering six of his latest varieties, but a later list, which only few seedsmen saw in this country, offered the entire 12. Springfield had all of these in bloom. I succeeded in getting good results from all but one. The following are the names and descriptions: Blushing Beauty, a soft, light pink, about the same shade as the Mrs. Gladstone, but of the larger, expanded form; Duke of Clarence, rosy claret, like the Purple Prince and Monarch in form, but more of a wine color than either of those; Emily Eckford, a reddish mauve when it first opens and on the first day closely resembles the Dorothy Tennant, but they part company in color after that, and the former then approaches, as Mr. Eckford says, a true blue — it is characteristic of all the blue Sweet Peas that they are not blue till about the third day; Firefly, the intensest scarlet-crimson variety we have yet had, and of excellent size; Gaiety, supposed to be a white flower striped and flaked with bright, rosy lilac, but with us part of the blossoms have a cheap red stripe, and the rest have had very faint lilac markings—it either does not hold to the description or is not remarkable; Lady Beaconsfield, not a loud variety, but of very high quality, remarkable for its primrose yellow wings, and having a soft, salmon-blush standard; Lady Penzance, one of the most striking and pleasing of all, the entire flower being a beautiful lacework of bright rose pink, and of improved size; Ovid, another pink variety with margin of deeper rose; Peach Blossom, a buff-pink, the buff on the standard fading almost into white; Royal Robe, a delicate pink of fine form, but slightly different from Blushing Beauty; Stanley, a deep maroon, and promised to be a large flower, which it probably is in England, but with us has been no improvement on the Boreatton; Venus, a beautiful salmon-buff and the best variety brought out this year.

It is a bold step for Mr. Eckford to offer 12 new varieties in one season, but most of them are decided acquisitions, and we need to make allowance for the severe test of an unfavorable season and the first year's change from the English to the American climate. In 1892 we could hardly form a correct judgment of the six varieties

then offered as novelties, but this year we have seen just what they are. These are the Dorothy Tennant, Her Majesty, Ignea, Lemon Queen, Mrs. Eckford, and Waverly. The Mrs. Eckford leads the list, and is a primrose yellow of splendid form. Her Majesty is a beautiful rose, a shade softer than the Splendour and larger. Lemon Queen hardly holds to its name because in 24 hours it has faded into white, but it is larger. Dorothy Tennant is a fine mauve several shades deeper than the Countess of Radnor. Waverly at first can hardly be told from Captain of the Blues, but while the latter changes into blue, the former holds its rosy, claret color. Ignea is a crimson scarlet, a shade deeper than Firefly. This may be said, that the last two years' introductions prove that Mr. Eckford has mastered the problem of improving the Sweet Pea. We want them as fast as he can give them to us. At the same time, the demand for the entire list will be confined to only a few seed-houses and here and there a collector of varieties. Some of them everybody who wants fine Sweet Peas ought to have.

Laxton, another English seedsman, offers five new varieties. They are the Etna, Carmen Sylva, Madame Carnot, Princess May, and Rising Sun. We also have about seven of the old varieties that have come down from time immemorial, the Painted Lady being perhaps the oldest. One of the old Curtiss magazines in your library traces the origin of Painted Lady to Ceylon. About 1700 is the date of the introduction of the Sweet Pea to botanical notice. Then besides the Eckford and Laxton varieties, and the seven old varieties, there are about a dozen varieties of real merit, the names of which are more or less familiar to us. Then I think four American varieties deserve recognition up to date, the Blanche Ferry, Emily Henderson, American Belle, and Splendid Lilac. I could give a list of other names in our catalogues, but they will not pass muster. People ask me about certain names that are found in the lists of Boston catalogues, not recognized elsewhere. Some of these names now go in simply because they are in their electroplates, and it is probably cheaper to leave them in than cut them out. I keep trying every year to find something of original value in them. People will say, name the best dozen of all the varieties. I should say that of all the varieties I have seen, the best dozen are, Blanche Ferry, Blushing Beauty, Countess of Radnor, Dorothy Tennant, Firefly, Her Majesty, Lady Penzance, Mrs. Eckford, Mrs. Sankey, Orange Prince, Stanley, and Venus. And it would be a pity not to include Lady Beaconsfield and 20 others. I put in Mrs. Sankey for white because it has the improved

form. I think the Emily Henderson leads all the white seeded whites now in the trade, for it has excellent size and substance, but Mrs. Sankey is a black seeded white and very fine. I am expecting that the new Blanche Burpee will, when we get it, beat them all. Indeed, the Lemon Queen is white after the first day, and is larger than Mrs. Sankey, and has the advantage of starting in with a lemon tint instead of a pinkish tint, such as the Mrs. Sankey has. That greenish white makes the most glistening white. There is just a suggestion of pink blood in the Mrs. Sankey. The Emily Henderson is as white as the jasper-white narcissus, and has all the good qualities of the Blanche Ferry. It only needs a process of high culture and selection to carry it up to the expanded form.

Now the Sweet Pea already ranks with other popular florist and exhibition flowers. It is interesting to see how one flower after another comes forward for special culture, and not only commands a place as a leading exhibition flower, but becomes the subject of a special literature. One by one our old garden favorites move to the front and form a galaxy of competitive flowers. It is no arbitrary authority that decides what flowers shall thus be put into the front rank for exhibition purposes. Taking the season through we have a succession of prominent flowers, each one of which has its particular season, and during that time, whether for a day, week, or month, they take their turn in holding a sort of aristocratic place among the more plebeian varieties of our gardens. Any flower that commands the first place in its particular season is bound to be promoted to that galaxy of favorites which make up our list of special exhibition flowers. And every such flower will have the best skill devoted to it, and the unlimited expense and favor of the enthusiast bestowed upon it; and every such flower will have its own literature; and associations will spring up to give it their patronage and protection. Each flower must win its place as the best that blooms in its particular season, and its promotion is then assured. The pansy has its day because it has outstripped some other early flowers. The rose monopolizes our attention for its short period, and nobody thinks to put forward a rival. The gladiolus has a right to say, "My day has come." Even the aster and the dahlia command their places. And the chrysanthemum bides its time when it can astonish us all. What will you say is the people's flower in July and early August if not the Sweet Pea? Surely for a time it has hardly a competitor. And even though it becomes a drug on the florist's hands, because everybody can have an abundance of their own Sweet Peas, its popularity is on

the increase. It has passed beyond that period when its fragrance alone was its chief merit, and now the eye is charmed by the wondrous variety of colors brought out by an exhibit that is up to date. And this year is to confirm our most enthusiastic praise of it, for heretofore we could have but a few stems of the finest acquisitions, while this year, at Springfield, I see no reason why we should not have large bouquets of them. I shall plant seed by the hundred that can only be bought, and doubtful stuff at that, for five cents a seed. After burying a good many five-dollar bills in that way we get a premium of four or six dollars, if we are lucky. But the Sweet Pea has won its place, thanks largely to Mr. Eckford, and having won its place the promise of what it is to be is wellnigh unbounded. I have no doubt there is many a modest little flower waiting tearfully in the back-ground for somebody to find out its wondrous possibilities. And I am sure we are every one of us so magnanimous in our love of flowers that we will welcome the humblest of God's beautiful creations, whether a wild flower, or an old forgotten favorite, to the noblest place the specialist can make it worthy of.

Now this year will, I think, prove that the Sweet Pea no longer needs a special pleader. Any one who has seen the colors of this flower in massed bouquets, the shades of rose and scarlet and pink, the blues and purples and browns, the glistening white, and the deep velvety maroon, the ever popular pink and white, and now all these set off by such new acquisitions of color as we have in the Orange Prince, the Primrose Yellow, the delicate lavender of Countess of Radnor, the salmon buff of Venus, 80 such bouquets no longer leave us to dispute whether the time has come for Sweet Pea shows. Yes, and the time has come to set up standards of excellence for this flower, and to treat it with something more than a little gush of feminine ecstasy. There is no flower that can be classified with more scientific accuracy, none that comes truer to our calculation, and none that promises greater things.

Let me speak now in the plainest and most practical way of the rules for growing Sweet Peas. I will first point out such rules as there can be no dispute about, and then try to give the reasons why many people fail, even when trying to follow those rules.

1. Sunlight we must have for Sweet Peas, and this is far more important than the nature of the soil. And a sunny location has also the advantage of thawing the ground out early so that the planting may be done in good season. And the rows should be planned so that the morning sun will strike one side, and the afternoon sun the

other. Thank God sunlight is free to all, and its quality is just as rich for one as another. So I say choose a sunny place if you want abundance of bloom.

2. There is another point in location. Trees may not shade your garden, but they may be near enough to it to rob it of all its fertility. I would as soon have a row of trees shading it on the south side, as to have them near enough on the north or any other side to send their ravenous roots where they will suck both moisture and nutriment away from your vines. The north ends of my rows run to the front fence, and just over the sidewalk are small maple trees and one small elm tree, and they suck the ground as dry as an ash heap so that my vines dry up at the north end and make but a weak display. I shall trench all along the fence and cut off every root, but the old robbers will go at it again, and especially the elm tree.

3. The matter of soil. I am more and more convinced that a clay loam is best, but by a judicious exercise of common sense any spot of ground that has the sunlight can be made to grow perfect Sweet Peas. I have never had the right kind of soil myself, but, since I learned to grow them, I have never failed. If I wanted a row of Sweet Peas, and had only a city back-yard filled in with coal ashes and tin cans, I would agree to have a magnificent row. Of course in that case I would make a good liberal trench and fill it in with as much care as a big flower-pot. I will speak of the trench method later. Well, take any such garden soil as you have. It may be sandy, or it may be the lightest kind of an old worn out loam. It may be light clay or heavy clay. Of course those of you who are working ground by the acre know what to do in bringing up a barren sand, or a worn out loam to fertility, and how to lighten a heavy clay. But I am supposed to be helping amateurs over the difficulties of a row of Sweet Peas. People ask, should the ground be rich? I say, yes, and yet from the reports I receive of many failures I suspect people are overdoing the matter of making their ground rich. You ask a gardener about culinary peas, and he will say that dwarf peas will bear and need rich feeding, but tall peas you must look out for lest you drive them to vines by rank feeding. Well, Sweet Peas are tall, and many people do get rank vines and no blossoms, and over-feeding is partially to blame. But I am trying to make my ground very rich, for the reason that Sweet Peas have a season of six months, and I want them to keep sending up fresh branches clear into October. Of course we are not growing seed, for if we were we should plan our fertilizing so as to mature the crop evenly and at a much

earlier date than for flowers alone. But you and I want three months of bloom, and the finest blossoms will come in Indian Summer days. So I say, yes, rich soil is wanted to carry the vines through a long season. But now it is just there where failure and success hinges. Folks say to me, I followed your rules and my vines either went to rank, bloomless weeds, or else they turned yellow and died before they had any chance to bloom.

Well, now, I should say to most folks: If you have a tolerably good garden soil don't fuss with any extra manure until at least your vines get up three feet, where they are ready to feed rapidly and will digest strong food. It takes a wise mother's skill to feed a baby to make it strong, and it takes a florist's skill to know how *not* to feed a tender plant and how to feed it, so it will get the food when it needs it. I many times start slips ignorantly in pots filled with too rich a compost, and the baby slips have a precarious existence for weeks because they can't bear such rich feeding. A little learning is a dangerous thing in the flower business, and with this new revival in Sweet Peas many people have rushed in to get big Eckfords, and have put rank manure or rich compost into their soil, and starved and rotted and burnt their vines by *excess* of feeding and overanxious care. I have been burying cords of manure in my ground, but I keep at least six inches of the poorest soil on top. I want it rich down where the roots will feed, when they get large enough to feed. And we have to plant our Sweet Peas deep to stand the Summer drought. The vine doesn't feed above the root, and of what use is it to have the upper soil full of rank matter? There is where the vine burns and rots. The upper five or six inches of soil should be kept as cool as possible, and a mulching above that shades it. But suppose in your zeal for fine Sweet Peas you spade in manure clear up to the surface of the ground, and the July sun is pouring down on that, and those tender vines with their seeds down deep have got to come up through that rank, heating manure, and because they seem to grow slowly you water them, and then you wonder why they get slimy and rot and die down. Every gardener knows that peas germinate at a low temperature, and love the cool end of Summer. It is a part of our problem how to feed Sweet Peas and keep them cool in July. I stand before my Sweet Peas and wonder how, when culinary peas mildew in midsummer, these beautiful vines can hold their green thrift, and be in the very prime of abundant bloom. Now, it would be a study to tell each man how to treat his particular soil so as to get these conditions which I have suggested,—plenty of plant food, where and when

wanted, and a cool upper soil around the vines. That upper soil may be any kind of poor soil, only I would not forget the mulching. A good average garden soil is safe, because its richness is likely to be moderate and uniform. If you plant right in such a soil without extra preparation, I would, after the vines get a good strong start, give them a good occasional watering with liquid manure or wash-day suds, or hoe in such fertilizers as will take hold at once, but don't begin to do this till they can bear it.

Now, since we are apt to have trouble with our Sweet Peas if we try to manure the ground in spring, I make it a rule to put into my ground whatever manure it needs in the *fall*. And the fall or winter is the best time to put on wood ashes, which is one of the best plant foods for Sweet Peas. We all know bone flour is excellent. And, if we make trenches, tobacco stems are excellent to put into the bottom. But in every case let us either depend on the garden soil for a sufficient richness or else put our compost deep enough so the upper soil can not burn or rot the vines above the seed.

Now, I use the trenching method a good deal, and it is applicable everywhere. When you dig a trench for Sweet Peas throw the best soil on one side and the poorest bottom soil on the other. Make your trench about 14 inches deep and wide enough for a double row. Put as thoroughly decomposed manure as you can get into the bottom, then the richest soil, and leave the poorest soil to fill in afterwards. Your seed in every case should be planted five inches deep, and so you will at first fill your trench in so as to leave about five inches of it open. Plant your seed in such soil as the tenderest roots will bear, counting on the feeding growing richer as the stronger roots go down.

4. Now about covering your seed. There is no arbitrary rule. Your judgment must control. My rule is this: I plant as near the first of April as possible, and the ground is of course cold. A covering of an inch lets the sun's warmth get to the seed. But the warmer the ground or the later you plant, the deeper you would cover. It is absurd for people in a warmer latitude to follow the rule of shallow covering. And people sometimes tell me how they covered their Sweet Peas four inches and how finely they did. That's all right. I usually cover about an inch, and this year I shall not be in so much of a hurry to fill in the remainder of the trench till my vines get pretty stocky. I hope by hardening the young vines a little to the weather to have very little loss this year.

5. The *time* of planting. This depends on when your frost is out, but the nearer to the first of April it is, the better. Why? Of

course they germinate at a low temperature and you need have no fear of frosts. But it isn't impatience that plants early. This vine, with the culture it ought to have, is a tall-growing pea vine. Its habit of growth may become a vice, and it may all go to vine. You want blossoms. I can only explain it in this way. With the rich feeding we ought to give it, the only way to save it from becoming a vicious weed, is to steady it down by slow growth at first. This may be all moonshine, but I think not. Your seed should be in early and slowly starting. They should be up before the first of May, and grow very slowly for a month. People get impatient, but that slow start is a virtue, and they should not be fussed over. Perhaps they are six inches or a foot high the first of June. Pretty soon after that they are going to make up lost time, and if they have had this steadying down, you'll see the first buds about June 20th, and that one first bud then is a cheering sign on Sweet Peas. It means they are not going to rush by the blooming point and leave you disappointed. It looks to me as if the cause of rank vines and no blossoms is a quick germination and rapid start and fast feeding under conditions that do not steady it down. Early planting is a simple rule, and a very sure one. Indeed, if one waits till the frosts are by before planting Sweet Peas, they will make but little growth, until the cooler days of autumn come, when it may be they will start in and blossom to some extent.

6. Notice the rule of *deep* planting. Mr. Eckford's rule is to plant three inches deep, leaving the ground a little hollow and mulching them in summer. I do not care to set any rule for this country. I plant *five* inches deep, and what I mean by that is, I fill my trench, as I have suggested, to within four inches of the top, and sow my seed one inch deep in that, and after they get a few inches high I fill in the rest of the top soil.

7. Let me suggest, if you have never had good success, that you try another plan, and, instead of sowing your seed directly in the trench, you sow them in some sheltered place, and after they are an inch or two high transplant them into your permanent row. In any case always have enough seed to sow an extra lot for this purpose, to fill in the missing spaces by transplanting. I transplant a great many, and always have a little extra side row of each variety.

8. In the case of the expensive, imported Eckford's I dare not trust a single seed directly in the cold spring soil. These I sow in boxes or pots in a moderately warm room, and always transplant. I am asked why this expensive Eckford seed is so poor the first year. I do not think there is any dishonest trick about it. Last year I had

two packets each of the 12 novelties,—about 24 seeds each, and, in the case of Ovid, I got not a single plant; four plants of Venus; about six of Lady Beaconsfield and Lady Penzance, and so on. Another gentleman in Springfield had four packets each of the set of 12 novelties, and, though he has a fine clay loam, the results showed up about as well as mine. But this year I should have little fear of putting every seed I got from these vines right into the ground, and I think hardly one will fail.

9. Now, to go on with the rules, along the first week of June is a critical time on account of the cut worms. And yet I feel little respect for any one who will let a cut worm get more than one plant. If you have filled in your trench an inch or two by the time the cut worms come, they will simply cut off the part that shows, and there ought still to be left a joint or two of the plant, and it will sprout again. But if you have from the start covered your seed four inches and the cut worm cuts them down the plant is gone. But why let a cut worm operate more than one night. Poke him out at once and snap him.

10. About the first week of June the question of bushes or trellis is on you, for supporting the vines. I use white birch brush entirely. I have them brought to me in lengths of 12 or 14 feet, and of each one I make two, cutting the stout end in seven-foot lengths, and using the more bushy top to fill in between. I always plant in double rows so as to bush between. And unless you have *stout* brush on which they can climb six feet some August storm will lay them out for you. I find it difficult to persuade people to bush them strongly. Last year I paid a man a cent and a half for each 12-foot brush delivered.

11. Now the chances are when you find that some of your seed did not germinate, and the cut worms have foraged on them, and the blight still further has depleted them, you will wish you had planted your seed thicker. But first mind this, if, when your vines are beginning to bloom, they stand three inches apart that is all right. And if you take them in time you can supply missing places by transplanting. But I would plant seed enough, not thickly in straight lines, but sow the double rows in a loose line, by which you can put in twice as much seed without crowding. And do not fail to thin out at last if necessary.

Let me urge upon you great patience in growing Sweet Peas. The month of May will find you wondering why they grow so slowly. By all means let them grow slowly in May. It is a great virtue. They

are making a root. Keep the weeds and the hens out, but do not fuss over them in May. There ought to be little need of watering them till later, and do not put any suds on them till they are stronger. They must grow slowly or you will have no blossoms.

My new book will illustrate seven or eight styles of trellis. A little ingenuity allows plenty of ways of making a trellis, but it must be six feet high, and must not cramp the vines.

12. I am sorry that people disobey one rule, and that is in letting pods grow, and saving a lot of seed. If they are growing seed all right, but if they think they can enjoy blossoms and save seed too, I simply say they are welcome to such seed as they will get. They will have about a third as many varieties next year, the cheaper sorts predominating, and if they follow it up they will have just such Sweet Peas as their grandmothers had. An ounce of a dozen varieties can be bought at a first-class dealer's for ten cents, and an ounce is enough for most folks. What enjoyment that means for ten cents!

Now we shall be out of fashion if we do not have a fine row this year. The best rule of all is, Keep on trying till you succeed.

There is a question before this country of getting seed of the very highest grade. We want to be assured that if we pay a first-class price we are getting seed that will produce varieties at their very best. If we buy a packet of Eckford's Monarch we want it to be the full sized Monarch, and not the old Black Sweet Pea. If we pay for Senator we want Senator in its noblest form, and not the old Dark Striped. Our choice is going to lay between sending to Eckford for his sealed packets, or else beginning now in this country to start a line of special seed growing in which the most careful attention shall be given to a small acreage to hold these new varieties at their best. Of course it will be to the interest of our large growers to make their seed stock just what it ought to be. They cannot save a few pounds of seed each year from their general acreage, and use it for seed stock, and expect to keep the varieties up to their best type. They should cultivate an acre or more every year by itself, and put on to that acre a skilled florist, and bring every vine to Eckford's highest standard. The seed grown on that special acre is the seed you and I want. The seed you and I get is from a field crop grown on large contracts, and most of it is good seed, but I see plainly the indication of the varieties falling back to an inferior form and size. Well, Mr. Eckford sells no variety less than a shilling a packet, and while you can rely on his seed being true, you cannot rely on its germinating in our severe climate. I like those California growers, and have great

confidence in their intention to do the best possible thing for us, but it is "business" with them, and they have got to grow tons of seed as cheap as possible, and all their seed passing through the trade must be of this kind grown on contract or for trade prices. The wholesale prices are not very different between the Hopkins strain and the Morse Company. I have no doubt that as this business develops they will give us what we pay for. They would take double pains with a crop for double price. I shall do my best to keep the matter stirred up at this end. The Sweet Pea is now an exhibition flower. In chrysanthemums you can make slips form the finest sorts; in Sweet Peas we depend wholly on seed. You can buy pansy seed at all prices. We certainly ought to have two sets of prices on American grown Sweet Peas. I have no doubt this country is to be the great source of supply for this seed. I even believe our Pacific coast will by special culture carry this flower in form and size and substance beyond Mr. Eckford's most sanguine work. Perhaps the demand has hardly yet risen for high priced seed, and certainly but few of Eckford's expensive packets are sold in this country, but the tide of interest is rising. The Sweet Pea is at a stage now when a special trade should be cultivated in the interest of those for whom price is a secondary consideration, and those who are entering the lists for competitive floriculture. You can get no definite idea from most of the seed catalogues about this flower yet. There is no uniformity in prices, partly because no two, perhaps, put the same quantity of seed in a packet. And you may buy your seed of Burpee, or in Boston, or in Worcester, and you will get the same grade of seed. And it is good seed. I would by all means buy of your home seedsmen just as far as they keep the varieties. You may buy the Lottie Eckford, but you will not get it of any house in this country this year. Every seedsman thinks he has it, but he has not. Mr. Eckford, himself, has lost the original Lottie Eckford, and this year begins over again with a new description. You may buy the Miss Hunt. I have two or three different lots of it, but have no confidence in either, and have just sent to English headquarters for it. Our California growers got mixed up on it. One of our best Boston houses last year thought they had the Primrose. As soon as I saw the seed I said it was not Primrose, and they wrote on and found the growers had been misled on that. You may buy the Delight, and you will likely get the Fairy Queen. You may buy the Empress of India, and you will get a mixture of Beatrice and Mrs. Gladstone, and so on. But that is because we are a fast growing country. Our

seedsmen are doing the best they can, and I am sure our California growers will correct these mistakes. The public may lose confidence in a seedsman here and there, but my confidence in their honesty and purpose to faithfully serve the public has gone up several pegs since I came to get a little behind the scenes. One year more will do much to make all the seed grown in this country true to name.

Were there time I would like to say something about *specialists* in floriculture. I would plead for their multiplication. It is indeed almost an infinite word to talk of specialists, yet every flower waits for them, and our best progress to-day is but tardy compared to what it will be when the real era of enthusiasm dawns, and instead of dabbling in a little of everything we each consecrate ourselves with the aim of an artist and the devotion of a scientist to some particular flower. An amateur is one now who amuses himself with flowers. We need a generation of specialists who will concentrate their floral love to a mission to make the most, each of his own chosen flower. I would love to be a specialist in Sweet Peas, but, I confess, I can only play at them. But I have caught a glimpse now and then of what a specialist must be. If he attempts to fill out the full measure of the word, and to get his one flower thoroughly in hand, he will find it is enough for one man to do to just compass the world-wide correspondence that is needed to get at the sources of information respecting his one flower. And, again, it is enough for a man of fertile brain to write what ought to be written to give the public an intelligent appreciation of the beauties and points of merit and of progess of a rapidly developing flower. And then in the direct work of growing the flower at its best, of improving it, of subduing its special diseases, and finding the sure way to destroy the pests that prey upon it, and that more advanced work of the development of new varieties, in which season after season the delicate manipulation of bud and blossom, and the constant watching for results and of variations in nature, and the tireless process of selection, goes on, requiring a keen eye for everything, and an unflagging zeal, requiring the most minute records, and the most classified preservation of everything experimented upon, the range of vision broadening every year, and every year the eye growing keener for observation; this is but a suggestion of the specialist's work, and it is *work*, but it is here that pleasure has its finest zest, and that the most exciting surprises are found, and the keenest senses of the soul are tingled even to the intoxication of delight. The gaping world may call such a man an enthusiast, giving to the word more or less of the meaning that he is

a "crank," but the uninitiated world doesn't know what it is that so absorbs him, he has a little heaven of his own. Mr. Eckford is an old Scotchman, but I think he must have the instincts of the specialist in him. I am told that about all any one can get out of him is, that he will take one of his novelties in his fingers and hold it off like a connisseur and say, "That's a grand flower." He wrote me that he worked seven years on the Sweet Pea before he got any result. It is one of the most difficult flowers we have for hybridizing, and it is no mean monument for a man to produce one new variety that is distinct enough to deserve a name.

Now, I did not finish about the specialist's work. Besides his correspondence and his contributions to floral literature, and practical work at being his own grower, and his skilled work at improving and adding to the varieties, besides all this, there comes in the annual exhibition work, and when one has got a creditable exhibit ready for Boston so as to get it there at 10 A. M., and repeated that experience for other cities day after day, as we ought to do in this country, whatever way he may get his pay back, it is one of the conditions of being a specialist. And then, lest the whole thing come to naught, his work has got to issue in some sort of seed business, the easiest way to do which is probably to gratify the big seed-houses in their incessant demand for novelties, and they are only too glad to have specialists help them out. But it doesn't end so easily as that, for any one who is a successful specialist must pay the price of being importuned for a thousand favors in the way of special seed, special advice, and special interest in every one who writes, even though they forget to enclose a stamp. Well, now, I said I wanted to plead for the multiplication of specialists, but I fear I have beaten a regular "tom-tom" to scare them away. This remains true, that the field opens very wide in this country for specialists. The man who has courage to be one, ought also to resolve to be an absolutely unselfish one, for he has got to do a brave and impartial work in reducing all synonyms to rightful names, in overriding all the selfish schemes of seed-houses to advertise themselves, in frowning upon all premature claims to novelties, and in so respecting the flower upon which he is at work, and the great floral public, that he will tolerate neither in himself nor others anything but honest and meritorious work.

The time is now ripe for a generation of floral workers who are neither amateur amusers of themselves, nor florists governed by a fickle public, but men to set the standard and lay a scientific foundation for the great future before us. I cannot blame our seedsmen

and florists for not helping us in this matter. They are at the mercy of a fickle public. Somebody must call that fickle public to order. A patron comes into a seed-house, and asks, "Have you such a variety of Sweet Peas?" If the seedsman disputes whether there be such a variety he loses his customer. "Yes, we have it," and with a mental reservation he lets it pass as a synonym, and deals out what he thinks the customer ought to have. Years roll on, and that seed-house lets that false name go into their list, and they know it ought not to be there. I write them frequently in a courteous way, and they thank me for what I am trying to do, and look on me as a genuine friend, and I respect them. They want a genuine list of names as much as we do, but somebody has got to protect them from a fickle public, by giving that public to understand the truth of the matter. And, again, our seedsmen have to depend on the seed growers. Where is there a seed-house that knows what the true descriptions of varieties are? Their trial gardens are to see whether their seed germinates. There is hardly a house in this country that can tell the names of one-half the Sweet Peas at sight. They have a thousand other flowers, and how can they know them all in all their varieties? And yet it would be a pity if somebody in this country did not know exactly the name and description of each one of a hundred sorts. Somebody needs to stand between our reliable seedsmen and the public and mediate for them, and hasten the day when the standard list of each popular flower shall be uniform in our seed catalogues, so far as they keep the varieties in stock, and uniformly reliable. The seedsman will go on doing the best he can, and the public will go on suffering disappointment till a race of specialists grow up to watch with impartial eyes the interests of all.

25th January, A. D. 1894.

ESSAY

BY

HOMER T. FULLER, Worcester, Mass.

Theme:—Causes of and Remedies for the Non-Uniform Bearing of Fruit Trees in successive years.

This topic was suggested before the writer had read the able and interesting report of the Secretary of this Society — Worcester County Horticultural,— for the year, 1892–93. Moreover it was suggested for discussion with the hope that some one else, more competent than the writer, would undertake its introduction. I can present only the results of my own observation, very slightly supplemented by the conclusions of others, except as touching the point presented by our Secretary, since my engagements have prevented my thorough examination of the literature of the subject. I apprehend, however, that the literature of the topic is meagre, and that scientific investigation of the subject has scarcely begun. We now really know little more about it than did Mr. Downing forty years ago. In the reports of the meetings of the American Pomological Society I find allusions to it, but no thorough discussion of the subject. Nor has the pomologist of the National Department of Agriculture — a division of the work established only six or seven years ago,—yet, apparently, amid the pressing considerations of diseases of vines and citrus fruits, had time to give to this important theme.

What are some of the facts which demand attention—which, indeed, have received some attention, but which must yet have more thorough investigation?

1. First, that certain regions of our country which formerly produced abundant annual crops of some kinds of fruits now rarely produce any crop of these fruits. For example, on the southern shore of Lake Erie in Chautauqua county, New York, and Erie county, Penn-

sylvania, twenty to forty years or more ago, both the apple and the peach were as certain crops as oats or barley; now there are plenty of thrifty trees, but rarely are they fruited. I have visited this region almost every summer for thirty years, driven about a great deal and seen plenty of evidence of the change. Everyone in the vicinity speaks of it. It is not simply the decadence in vigor and fertility of old trees, but I know an orchard of young apple-trees set out from thrifty nursery stock eighteen or twenty years ago, on ground never before set to fruit, and still as thrifty in appearance as any fruit trees could be, and yet on a hundred trees together, on a fertile soil, I have not been able in any of ten years to find a peck of apples.

I was told that the last summer a Baldwin apple could not be found in Chautauqua county.

2. Secondly, in some regions there are fair crops of fruit three or four years out of ten, and one year in ten the production may be abundant,—the general tendency being to a decrease in production.

3. Thirdly, it is true that some years in large areas, extending over many States, there is a general scarcity of some kinds of fruit, as this year of apples all over the eastern and northern United States.

4. Fourthly, in some localities fruit-bearing is uniform unless prevented by manifest or easily-explained causes — uniformity is the rule, barrenness the rare exception. This is the case with oranges, guavas, lemons, etc., in Southern Florida, and with the same and other fruits in Southern California, with oranges in Crete, figs in Smyrna, and dates in Egypt.

5. Fifthly, it is also true that in a very restricted locality trees of the same kind of fruit and of the same variety, planted at the same time, under the same cultivation, both thrifty, bear very differently.

It is granted that each kind and each variety of the kinds of fruit has, to a large extent, its peculiar habitat, or natural soil and climate. And yet some fruits are very widely distributed, as the strawberry, the cherry, and to a less extent the apple. Some fruits are limited more by soil, others by temperature.

With these limitations, this paper has nothing to do. We cannot go beyond the fact that strawberries do not fruit well on a heavy clay soil, and the other fact that apples love clay and abhor sand; that neither fruit trees nor forest trees thrive where exposed to incessant or frequent gales of wind, and that drought on the one hand and excess of moisture on the other may ruin not only the product, but often the tree itself.

Moreover, we all understand that freezing either the ovary or the

stamens of the flower, or the ripening fruit, will *destroy*, or else very greatly impair, the quality of the fruit. These causes of unproduction are, for the most part, irremediable; we cannot fight against nature, or so alter the courses of the stars.

But there are other causes of barrenness which may be remediable, and others still which, if determinable, may be brought under the same category, and this is the object of our discussion.

1. To begin with, it must be conceded that both Mr. Downing and Mr. Lincoln are right when they attribute a considerable proportion of a growing increase of non-production to the exhausting of certain chemical or mineral components of the soil. Leaves and wood derive their constituents chiefly from the atmosphere and from water,—not so with flowers and fruit, — these tenderest parts must have more solid nutriment, just as the more solid twigs and branches come from the lighter and more tenuous chemical elements. The phosphorus and nitrogen and lime and potash which have been depleted must be supplied. The soil must be stirred that it may absorb oxygen, ammoniacal gases, and the water which carries them all in solution. The success of Florida and California fruit-growing has been considerably due to the fact that this culture has been the chief, I might say, the only business of those who engage in it. Here at the East, it is generally a side-show, or, at best, a partial occupation. Nurseries are cultivated and so are young trees for a half-dozen years, then there is, just so soon as the trees begin to bear, a cessation of cultivation of the soil. With neglect, there is a steady waning of production and, what is more important, deterioration of the quality of fruit. Even in California there is beginning of complaint on both scores. At Riverside, both packers and growers agree that the oranges are not so good as they used to be, even in the best years, and that they are not sure that they know what changes of their methods are desirable: whether nitrogen introduced by Chilian nitrates is needful, as Professor Hilgard suggested, or whether they are irrigating too heavily, or pruning too little.

2. The second cause of non-uniform production of fruit is undoubtedly overbearing in years when all the conditions for fruiting are favorable. The tree which has carried a breaking or a bending burden is like a man who has strained the muscles of his back, or the tendons of his limbs. Months and even years may be required for recovery. there may be needful an entirely new growth of wood before there can be any considerable recurrence of fruitage.

Two remedies have been suggested and, to some extent, applied in

counteraction of the tendency to over-bearing. (*a*) The picking off of blossoms or buds. This is slow and expensive. Spraying to kill the blossoms in part might be substituted. I have not known trials of this. The copper solutions would undoubtedly accomplish it, but it would require considerable skill to apply in due proportion. But the real hindrance to this is the almost universal feeling that a bird in hand is worth two in the bush, and that, we will get the most possible this year and run our chances for the next. We may not live till next year. It is too much a sacrifice of ourselves for posterity.

(*b*) Another remedy is pruning. This is a vexed question. Californians do not prune orange-trees. They may yet wish they had done it. There seems to be a tendency at present among pomologists to discourage pruning of trees like apple, pear and cherry, except to cut off dying or dead wood. My own impression is that we have in our practice gone to extremes, — either have not pruned at all or too much in one year. We may learn a lesson from the breaking down of trees by the weight of clinging ice a few years ago. They recuperated wonderfully, but the new shoots grew so rapidly that they were tender, and could not the next year bear much weight of fruit, neither mature all that clung to them. If new shoots were pruned each year on the same principle that we prune grape-vines — say so as to leave the new wood only a few inches in length, I think it would be a decided advantage. I have tried this with pears to some extent and with Clapp, Bartlett, Beurre D'Anjou and Sheldon, found it useful. The tendency of all these varieties is to throw out long shoots at the top of the tree, especially if the trees are crowded, and then when these trees bear, be it the first or the second year thereafter, they are too heavily laden. A combination of pruning and deflowering might be wisely practiced. Has anyone tried it systematically? I should like to know.

3. Drought in the early part of a season may prevent the development of fruit, or drought in the midsummer may hinder the storing of materials for the next year's crop. There is no question but irrigation for all but the deepest-rooted trees in California and other western States gives fruit growers in those regions an advantage. With water at their command they can adapt its quantity to the needs of the crop and thus secure a perfection in the development of fruit which in the East it is not always possible to attain.

4. The fourth cause to be mentioned is *variability of temperature* at the time of flowering. Frost at this time certainly ruins the prospect of fruit. It may cut off the crop entirely, or it may result in a crop of inferior quality, as in the case of oranges at Riverside, Cali-

fornia, in 1891. But a low temperature, yet above freezing, continued for days, or a sudden reduction of temperature, or changes through a wide range of temperature, may accomplish the same disastrous result. For this cause as for the freezing there is no remedy except the shelter of forests. These are planted in California to protect from cold winds, and on the shores of our great lakes it is a grave question whether this has not been one of the chief causes of the growing infertility of the apple, the pear, the quince, the cherry and the peach.

5. A fifth cause of infertility is *rain* at the time of blossoming. This falling at the maturity of the pollen washes it away, perhaps rots or makes it worthless. Moreover, even if little rain falls, if there is a condition of mist and cloud for several days, the result is the same—the pollen does not mature, the dampness makes the union of pollen and ovule fruitless.

Certain it is that in the West, where there is almost unbroken sunshine and little rain, fruit crops are surer than here, and except as rarely affected by blight of frost, are practically uniform.

Rain also, prevents insects from visiting flowers and the fertilization usually performed by such visitation does not take place. Many authorities believe that the cherry is fertilized only by insects strewing the pollen over the tops of the pistils. If this is true — of which I have some doubts—then we have another factor indirectly hindering the production of fruit.

If it were rain alone that washed away or rotted the pollen, younger and smaller fruit trees might be protected from wet at the time of blossoming by canvas protectors such as are used for hay-caps, but for large apple-trees this plan would probably prove too expensive. Moreover, if we are dependent on insects for fertilization, the shelter-tent plan would prove ineffectual, since if the atmosphere be filled with rain or mist, insects will not leave their shelters to visit the blossoms. And yet I have a strong impression that this question of fertilization is a very important factor in the cultivation of fruits, and that in some way the securing of fructification by artificial means will be a possible attainment. Can we not experiment in this direction?

6. It is certainly pertinent to inquire in this connection whether either too little or too much wind at the time of fruit-blossoming may prevent fertilization. The point is one on which I can present but very meagre data. I have two Beurre d'Anjou pear-trees, one of which is sheltered by a line of higher trees on the north of it and which rarely fruits, the other planted at the same time and almost unsheltered bears fairly well almost every year. A sheltered Urban-

iste has borne only one good crop for ten years; an unsheltered and equally vigorous pear-tree of the same variety has borne at least a fair crop each year since it came to bearing. These two instances are hardly enough to support a theory: perhaps the suggestion may be supplemented by the experience or observation of others.

NOTES. [The discussion following this paper was interesting and valuable. Two or three of the participants related accounts of their success in securing nearly uniform bearing of apples and pears by picking off a part of the blossoms when the tree seemed likely to overbear.

Instances were also given of the change in the year of fruit-bearing by the ruin of the crop by frost in the regular year of bearing.

The matter of too much wind or too little wind at the time of blossoming was thought to have little influence on fructification.

The following varieties of apples were mentioned as bearing only on alternate years: Oldenburg, Baldwin, and Holden Pippin; while the Roxbury Russet, Palmer Greening, Rhode Island Greening, Early Williams and Astrachan bear annually.

Apples grown in grass-ground have better keeping qualities,—they mature later.]

1st February, A. D. 1894.

ESSAY

BY

GEORGE CRUIKSHANKS, Lunenburg, Mass.

Theme:—Small Fruits.

The culture of small fruits is a subject of great interest and worthy the attention of all cultivators of the soil, and where the location and soil are favorable there is money in small fruits for the man that is fitted for the business. On almost every farm there may be found soil suitable for their culture. To obtain the best results the land must be rich and in the best possible condition by deep ploughing and heavy applications of good stable or farm-yard manure. It is important that the soil is in the best mechanical condition, so that the roots of the young plants can penetrate the soil freely in search of food. Success depends very largely on the man who undertakes the culture of small fruits as a market crop; he must have a taste for the business, should know the character of his soil, and have some knowledge of the use of fertilizers and their mode of application.

The first fruit of which I shall speak is the *Strawberry;* this is the king of small fruits. The strawberry has been grown in the gardens of the wealthy since the days of Shakespeare. Early in the present century Keen's Seedling was produced in England; this was the type of all our present valuable varieties. The first improved American variety was sent out by the late Charles M. Hovey. The introduction of Hovey's Seedling created an interest in strawberry culture that has continued till the present time. With new varieties came improved methods of culture and a demand for more fruit, so that now it may be said that all our people have their strawberries and cream in their season. The strawberry adapts itself to a great variety of soils. The soil best suited to its culture is a deep sandy loam with a naturally moist subsoil. Such land, thoroughly prepared as advised, will produce good crops of fruit. For field culture the matted row is the usual method; for this, mark out rows with a marker three and a half feet apart, plant from 12 to 20 inches in the row, according to the

variety; set healthy, medium-sized plants; it is important that the soil be well firmed around the newly set plants. As soon as the plants show signs of new growth begin to cultivate and hoe. Give frequent cultivation during the season to prevent the growth of weeds; narrow the cultivator as the runners extend till they cover the desired width. It should be remembered that you cannot grow a crop of grass or weeds and a crop of strawberries on the ground at the same time. Clean culture is one of the secrets of success with the strawberry. After the ground has frozen in the Fall give a light mulch of meadow hay, leaves from the forest, or pine needles. As soon as it is safe in the spring to do so, remove the mulch from the earliest varieties and let it remain on the late sorts as late as possible, so as to retard the ripening of the fruit and extend the season. I have found an increase in the crop by removing the mulch a few rows at a time; give a dressing of good fertilizer, cultivate lightly, and replace the mulch to keep down weeds, preserve moisture, and keep the fruit clean; the result will be larger and finer fruit. When the plants have matured a crop they are in an exhausted condition, and are in a dormant state; if they are to be kept over to bear another crop the mulch should be cleaned off at once, narrow the row a little, apply a dressing of fertilizer, cultivate, and hoe out all weeds; the plants will soon send out a new set of feeding roots and at once begin to lay up stores in the crowns for a crop the following season. Varieties: Beder Wood, Haverland, Eureka, Bubach, Warfield, Leader. For special culture: Parker, Earle, and Belmont. The Marshall for trial.

The *Raspberry* is a profitable fruit to grow for the market. When of good quality it commands good prices. The raspberry succeeds best in rather moist soil; plant in rows six feet apart, three feet in the row; when planting cut off the cane to within six inches of the ground. When the young canes have reached the height of two or two and one-half feet nip out the top, this will cause the canes to throw out laterals, these should be cut back to ten or twelve inches the following Spring. Another method much practiced is to let them grow at will all Summer, drive down stakes in the row, stretch a wire each side to give them support; after the fruiting season is over cut out all the old wood and thin out the young canes if too thick, leaving wood enough to bear a crop the following season, this will give the bearing wood a better opportunity to ripen. Varieties: all things considered, the Cuthbert stands at the head of the list, the Marlboro', Thompson's Early, Prolific, and Golden Queen.

The *Blackberry*. Plant eight feet between the rows, three feet in

the rows; the after treatment may be the same as the raspberry. Varieties: Agawam, Snyder, Taylor.

The *Currant* is well worthy the attention of the small fruit grower, the bush is perfectly hardy and productive, the fruit is applied to so many uses it is always in demand. There is no fruit-bearing plant, tree, or shrub that responds more quickly to good cultivation than the currant; like the strawberry it adapts itself to a great variety of soils, but it succeeds best in a strong, deep, rich loam. Plant strong two-year old plants, five feet apart each way—good crops of currants can be grown in the partial shade of the orchard—the plants should be well cut back when planted, prune annually, keep the head open to admit air and sunlight. Unlike the strawberry, raspberry, and the blackberry the currant can remain on the bushes sometime after it is ripe, and by a proper selection of varieties may be kept well into the Fall. Varieties: Cherry, Fay, Victoria, and White Grape. Moore's Ruby for trial.

The *Black Currant* is not grown to any extent in this country. None of our small fruits yields so rich a jelly or has such medicinal properties as the black currant. Being a native of Russia and Siberia, it is among the hardiest of our fruit-bearing plants; it is productive, bears heavier crops than any of the other varieties. The planting and after treatment may be the same as the red and white sorts. Varieties: Black Naples and Lee's Prolific.

The *Gooseberry* is the finest green fruit that appears in our market, of home growth, and is much sought after for cooking purposes; it is of easy culture, hardy, and productive. The gooseberry requires cool, rich, moist soil, the planting and after treatment may be the same as for the currant. I prefer the fall for planting all the bush fruits, give a mulch of well rotted manure for the Winter, and they will start with vigor in the spring. They are all benefited very much by a mulch in the Summer; especially the currant and gooseberry should be mulched heavy to keep the roots cool and moist. Varieties: Downing and Houghton.

The critical time in the culture of small fruits, especially the strawberry, is when the fruit is swelling and approaching maturity. In the absence of artificial irrigation I have found deep ploughing and heavy manuring the best protection against drought. It should be the ambition of every fruit-grower to produce the best, and only the best that can be grown. Gather your crop carefully, grade and pack honestly in clean, neat packages, put your crop on the market in the most attractive form, and success will be yours.

8th February, A. D. 1894.

ESSAY

BY

ROBERT FARQUHAR, Boston, Mass.

Theme: Bulbs and Tubers.

I propose giving you some particulars of a recent visit to Holland and the famous bulb gardens in and around Haarlem, and I shall endeavor to describe the methods of cultivation practised by the leading Dutch bulb growers. I shall not occupy your time with any remarks upon our voyage across the ocean and the strange mixture of discomfort and pleasure experienced by every passenger on an Atlantic steamer. Suffice it to say that on the gray of a July morning we sighted the Dutch coast. The land lay before us, flat and low, like a great green sea on which the huge sails of numerous windmills seemed to take the place of the sailing craft on the blue sea behind us. To reach Rotterdam we sailed up the river Maas several miles.

All along the sides of the river heavy stakes or trunks of trees are driven about a foot apart to protect the banks. In many places strong willows are also worked in, basket fashion, as a further protection; the protruding tops of the stakes being the framework. On the banks grow the dyke grass, the roots of which band themselves together inseparably, holding the loose sandy soil in place. This grass is planted on nearly all sea, river, and canal banks in the Netherlands. Proceeding up the broad river numerous evidences of the patient industry of the people are presented. On either side the low, level fields stretch for miles, intersected by ditches and canals. Everywhere the cultivation seems almost perfect and the crops are exceedingly luxuriant. Large herds of black and white cattle, numerous windmills, and here and there a canal boat moving slowly along pleasantly relieve what would otherwise be a very monotonous landscape. At length we enter the harbor of Rotterdam, which, for Holland, is quite a large and stirring city.

A walk through the principal streets of one of the large Dutch cities is full of interest. As a rule wide canals occupy the centre of all the main streets. These canals are the chief highways of the country. They extend in connected systems all over the land, and most of the produce is conveyed to the city markets by boats, on which the owner and his family live a great part of the time. The canals afford the boatmen almost as good an opportunity of selling their products as our market streets do to our farmers. Once in the city the boat is guided to its location, tied to a convenient stake, and there it remains till its load is disposed of. Firewood and dried peat in the form of bricks, for fuel, are brought from far back in the country; also hay, vegetables, and fruit. A line of boats extends along the canal sides, and purchasers, as they pass along, can tell where to find what they want, by the little piles of merchandise placed on the wharf or street opposite each boat. Vegetables are hawked about the streets on two-wheeled hand-carts pushed before the owner. One of the first sights which met our eyes after landing was a hand-cart full of magnificent heads of cauliflower. The cart was in charge of a woman who pushed it along in a very business-like fashion, but her labors were very considerably lessened by the work of two large dogs yoked to the axle.

It is a strange sight, but throughout Holland, particularly in the country, women are seen taking a hand with men in many kinds of out-door farm work, such as hoeing, weeding, ploughing, boat hauling, and so forth. As a consequence they are strong and healthy in appearance, but far less refined and intelligent than those occupying a corresponding station in New England. Passing along towards the suburbs we note everywhere the beautiful deep-green color of the grass and foliage. Roses, pansies, geraniums, and yellow herbaceous calceolarias are seen in perfection of color in well-kept gardens. Among vegetables we particularly note the excellence of the cauliflowers. It is a sure crop in Holland; the cool climate and a soil which is always moist, but rarely or never too wet, seems to suit it exactly.

But Haarlem and its bulb gardens interest us chiefly at present, so we leave the city with its quaint buildings and old churches. The road over which we are driven is paved throughout with dressed stones. The ever present canal runs alongside, wide enough for large boats to pass on their way to and from town. One of these passes every now and then laden with country produce, and is pulled along by a horse walking on the roadway. Occasionally the owner or his wife does the

hauling, as for instance at feeding time, when the horse passes on to the boat and enjoys his hay and a sail at the same time.

Wherever we look the landscape has the same level appearance, and the soil is loose, sandy, and fine. We pass windmill after windmill, each with four huge sails, often measuring 50 feet from end to end. These mills are used for a variety of purposes, such as grinding grain, sawing timber, etc., but chiefly for pumping water from the small ditches which drain the fields into the large canals. When completely equipped with machinery they are quite costly. Standing on the road we counted 25 in sight at one time. Farming is the chief occupation of the country people, and grass the principal crop raised. The implements and tools in use are very clumsy and heavy, and as we see the farmers at work, moving leisurely about in their great wooden clogs or shoes, we wonder how they can keep their farms in such excellent condition as is almost uniformly seen.

The district in which bulb growing is carried on is of comparately small area. The ancient town of Haarlem is its centre. It is a very quiet old place, with many buildings of curious architecture. Many of the bulb merchants have business offices in Haarlem, but the grounds where most of the bulbs are grown are several miles out of the town. One class of merchants own extensive and valuable gardens and grow the bulbs they sell, or make contracts with raisers for them. We find also in Haarlem another class of dealers who issue catalogues, but who grow few or no bulbs and own no gardens. These pick up their bulbs where they can get them cheapest; sometimes at public sales; at other times of country farmers who make a business of raising. Large quantities of their bulbs annually reach this country, as the price lists are well gotten up and circulated widely among dealers. Bulbs can be purchased of this class of dealers at a low price, and often give as good satisfaction as those from growers, but they are not to be relied upon. Even by a visit to Haarlem one is not always sure of getting the bulbs shown unless he knows the grower to be reliable. We know one gentleman who, visiting Holland at the season of flowering, was invited by a Haarlem dealer to ride out and see his tulips. He went and was delighted. The flowers were all that could be desired. A day or two afterwards he was with another dealer who invited him to visit his bulb gardens a short distance out of town. Fancy his astonishment when he was driven to see the same tulip grounds which he had been shown by the first dealer! The fact was that neither of the two owned them. They were the property of an old Dutch gardener who sold his crop to the local dealer who would

pay the highest price. He of course well knew the inwardness of these visits, but it was for his interest to say nothing.

Many of these farmers raise more bulbs than some dealers who issue catalogues, but from want of enterprise or lack of education have had to depend upon their home markets. They have confined themselves to raising a few leading varieties, usually of hyacinths or tulips. Education and a knowledge of English have of late become more general, and, consequently, in the past ten years, many of those who grew for the Dutch houses are offering their bulbs in the American and English markets. This lively competition has caused a great decline in prices, much to the annoyance of the wealthy old planters, who for many years reaped a rich harvest of golden guilders unmolested in their monopoly. It must be acknowledged that they still have advantages in the business. They own the land best suited for raising the various kinds. Most of them are wealthy, and growing in immense quantities they can afford to send older and better bulbs than mere speculators. The gardens now cultivated by the best growers we met with in Holland have been owned by members of the same family for many years, in some cases nearly two centuries.

Pardon a word of caution here to any who may think of visiting Holland at some time to purchase. When you get to Haarlem do not disclose your business to the first dealer you meet. If you buy largely he will exert himself to the utmost to interest you. He will show you how bulbs are propagated, cultivated, and cared for through all the stages of their growth. After one whole day spent at his residence, gardens, and storehouses, his carriage will be at your hotel the next, before you are up, to take you to see some of the sights, which he informs you no one ever misses who has time to enjoy them. In short, if he wants you for a customer, he is pretty sure to monopolize all your time so that no rival dealer gets a chance at you. When in Holland we visited a number of the leading gentlemen engaged in bulb growing. They are, indeed, a fine class of men and as unlike the Dutchman of our picture books as can be. Nearly all were gentlemen of wealth, education, and refinement, who seemed to enjoy life to the full. They own large and fine residences and are very hospitable.

The bulb gardens of the large growers are all of the same general appearance. Fancy a field from 15 to 25 acres in extent, perfectly level, but cut up by ditches and wider canals into numerous rectangular patches. Every 200 yards or so we cross a canal large enough to float a boat, the bridge over which we pass being raised to allow boats go to and from the fields. These canals are met at right angles by

smaller ditches, 40 or 50 yards apart, which are so narrow that one can step across. As there is always water in these the fields never get very dry, but the soil being exceedingly porous and sandy surplus water rapidly drains off. Only in seasons when heavy rains occur late in Spring are the bulbs likely to suffer from too much moisture; they will then ripen very late and, being soft, keep and ship poorly.

These canals usually connect with the nearest commercial canal system, and the plan of their arrangement is such that manure can be carried to all the fields from the barns, and bulbs and other crops to the various stores or bulb magazines, in boats. The surface of the fields is about two feet above the water in the canals and ditches.

At each end of the large plats are holes, in which barnyard or cow manure is left to rot in readiness for digging. It is brought from the yards in boats and pitched direct into the holes. It is distributed over the fields from carts with very broad wheels, before digging time. All the manure used in the bulb ground is old, thoroughly decomposed, and fine. The soil is so very light and free from stones that a great deal of the work of planting and lifting is done by hand, without the use of tools. One of the workmen usually accompanied us as we examined the bulbs, and frequently scooped out with his hand in a moment a row of a dozen or more hyacinths planted four inches deep. The soil is in fact a fine sand; evidently stream deposits. It is enriched with liberal quantities of old manure. The light colored, fine, sandy soils are best suited for the cultivation of hyacinths, tulips, crocuses, and narcissi. Spireas, dielytras, lilies of the valley, and others of that class require the darker, heavier soil, also found in the vicinity of Haarlem. In order to secure healthy bulbs it is found necessary to alternate crops. Thus hyacinths are usually followed by a crop of potatoes, these by a crop of tulips, then potatoes again, followed by narcissi or crocuses. The fine roots of the potato, decaying in the soil, leave there a necessary element of bulb food. All work of these gardens is done neatly and systematically. The bulbs are usually planted in beds of an exact width, the lines containing exactly the same number of bulbs. Almost invariably the whole establishment bears a well cared for appearance. From early Summer till Autumn work is begun daily at about five in the morning and ceases about seven at night. Women and men are employed in about equal numbers. A dining-hall is a feature of every large establishment. To it all hands repair four times daily to partake of coffee and other drinks provided by the employer, the work people bringing their own lunch baskets. Sufficient time is allowed at meals, and I cannot remember

seeing anybody making much haste at any time during our visit, but none were idle, and the work people appeared happy. Most of them live in cottages in the gardens, each with a neat garden adjoining.

The magazines for storing marketable bulbs are situated by the sides of the canals, and are usually erected alongside of each other and connected by broad passage ways. One of the best arranged we visited had light rails along the passages, on which hand trucks large enough to hold about three barrels full could be driven easily by hand to any part of the buildings. Thus as the boats arrived from the grounds the baskets of cleaned bulbs were lifted from the boats on to the trucks, which when loaded are pushed along the rails to the place where they are to lie till packed for shipment. Sorted hyacinths are all kept in one section, laid in regular rows, one deep on the shelves, which are about seven inches apart. Tulips will be found in another section, double and single varieties being in different parts. Other leading species of bulbs, such as narcissi, scillas, crocuses, etc., are in their allotted section. All are carefully named and labelled; the varieties of the species being kept distinct by means of movable blocks of wood. All other bulbs with dry roots are stored before shipment in a similar manner.

We shall now endeavor to describe somewhat minutely the manner in which one or two of the leading species are propagated and cultivated. We select the hyacinth as being particularly interesting, and also on account of its great value as a decorative plant at a season when other flowers are not over plentiful. In Holland this flower is grown entirely in sand as fine as meal, old decomposed cow manure in liberal quantity being placed underneath or mixed with the soil before the bulbs are set out. The peculiarities of the soil and climate of Holland are more favorable to their production than any other section. The original of the Dutch hyacinth, *Hyacinthus orientalis*, is a very insignificant plant, bearing on a spike a few small, pale blue, single flowers. From this small beginning, as cultivated more than 300 years ago, we have, to-day, over 500 varieties of nearly every color, many of them charmingly beautiful and nearly all of easy cultivation. We have a record of the existence of six single varieties in the year 1597. Towards the close of the seventeenth century double flowering sorts began to appear, and for many years the double form was most esteemed. In 1754 an English writer described upwards of 50 single varieties and 90 double. At that date favorite sorts were sold at extravagant prices. One white variety, La Reine des Femmes, sold for 50 guilders a bulb on its first appearance. A double blue, Over-

winner, then cost 100 guilders a bulb, while another, Gloria Mundi, cost 500 guilders, equal to $200 of our money, but, as values were at that time, much more relatively. These prices are taken from a Dutch grower's catalogue of 1754, and are not figures from fancy. In 1755 we have the first record of their being grown in glasses.

Of late years single flowered sorts have been most popular, and few will question the justice of the preference. In some of the newer varieties a great improvement has been attained in the size of the individual flowers, the breadth of their lobes, and in brilliancy and depth of color.

New varieties are produced from the seeds of fertilized flowers. Clear colors are selected for crossing. The seed is sown in August, sometimes in pots, but generally in specially prepared beds, in which the growth and strength of the new plants are greatly promoted. The seed beds are protected by straw during Winter and the plants show themselves in early Spring. The bulblets are lifted about midsummer, placed under cover and allowed to dry off with the leaves on. In September they are replanted in poor, sandy soil, underneath which is put a foot of the richest material possible, consisting of cow dung, river mud, and sand. The Dutch growers are particular not to allow any manure to touch the bulbs. They rest in clear, sharp sand, with which they are also covered. This treatment results in the bulbs produced being shapely, clean and hard skinned. The sand also serves to protect the bulbs from the attacks of insects; its sharpness hinders their approach. It may be well for us to remember this fact in planting other bulbs besides hyacinths and tulips. Hyacinths usually bloom at four years from seed, but a five years old bulb gives better and stronger flowers.

The great bulk of hyacinths are grown from offsets or small bulblets obtained by cutting large bulbs and growing them one year. Several methods are in practice for obtaining these offsets. In the case of old, well known sorts, for which there is a sure demand yearly, the old bulbs are cut so as to produce the largest bulblets the first year. If the variety to be propagated is rare and costly the bulbs are cut so as to produce the greatest number of bulblets. These last will be so small that they must be grown five or six years before they are of marketable size. The method commonly practised is to cut the old bulbs twice at the base. This is done in June or July. The bulbs are then laid on shelves, where the sections cut, partly open and in five or six weeks a small bulblet will be found formed at each scale where cut. The mother bulbs are planted in September, about seven

inches deep, to be lifted early in the following Summer. They throw up a few stray leaves only, all their strength going into the bulblets. Bulbs so propagated are fit to sell in four years; they are then at their best and will deteriorate afterwards, becoming divided and entirely useless for sale.

There are two methods of cutting practised to obtain a great number of bulbs from one. Some scoop out the whole of the base of the old bulbs and so attain their object. Others cut the bulbs in two or three pieces and get an enormous number of very small bulbs, which will not be at their best till grown up six years.

Hyacinth culture in Holland is by no means a pastime. They require great care at every stage, particularly those which are to be sold in the Fall. These when lifted from the ground are laid, with roots and leaves still on, on shelves and covered with dry sand for about ten days. This care is necessary to give the bulbs that fine, clean appearance and thorough ripeness and solidity which is desirable. They are then cleaned and carried in padded baskets to their place in the magazine. There they must be watched and cared for, dry rot or other disease often attacking them, particularly after a wet Spring. Most of the hyacinths leave Holland in August. They are shipped in immense numbers to Russia, Germany, France, America, and England. On account of the laws regarding phylloxera, none are admitted into either Italy or Spain. In England they are very popular as window plants. One grower for Covent Garden Market last year planted 50,000 bulbs. With the people here they are sure to be popular, when it becomes generally known that little skill is required in their cultivation, if supplied with plenty of water and fresh, cool air.

Hyacinths in Holland are never allowed to freeze in the beds during Winter. They are covered with straw to the depth of six inches and keep rooting all Winter. The climate is, of course, much milder than ours, 20 degrees of frost being considered Siberian weather.

With tulips, as with hyacinths, new varieties are obtained from seed. Selfs of the purest color are used for crossing, and only those of the most perfect form of flower.

All the varieties of tulips in commerce are increased by offsets. A number of these are usually found at the base of each mature bulb after flowering, also one or two large flowering bulbs. These flowering bulbs lie close to the stem and are usually marked by it. In this way one can almost certainly distinguish flowering bulbs. Tulips are lifted from the bed as soon as their leaves turn yellow. If allowed to stand longer the bulbs get soft and the skins come off. Under some

circumstances it is necessary to lift them before the leaves turn. There is no danger of injury to the bulbs when lifted soon after the petals drop, if properly done. They are removed to some perfectly dry shed and covered with earth for eight or ten days. At the expiration of that time they will have ripened fully, the leaves and roots will have become dry and the bulbs ready to clean and store.

In Holland, when it is desired to produce blooms of the greatest excellence for exhibition, great care is given to the preparation of the beds. The natural earth is removed to the depth of 18 inches; six inches in depth of manure is first put in and the bed is then filled with a mixture of old manure, loam, and sand which has been turned frequently in sunny weather to kill the worms. Sifted sand surrounds the bulbs, which are planted in October four inches deep. Before being set the skin is slightly raised from the base of the bulbs to permit the roots to escape more freely. As the season of flowering approaches a raised covering is put over the beds so that the flowers are protected from injury by rain and direct sunlight. In this way they are made to last in bloom as long as a carnation, and their size and color are enhanced and intensified. The history of the tulip is an interesting one, and although the time is long ago past when fortunes were spent in the purchase of a few coveted bulbs, their real beauty and worth have never been more generally acknowledged than at the present time.

Much might be added of interest regarding the cultivation of the narcissus, crocus, lily, and other bulbs in Holland, if time permitted, but the varieties described must suffice at this time, and I hope some of the remarks may have proved of interest.

11th February, A. D. 1894.

ESSAY

BY

E. I. COMINS, Worcester, Mass.

Theme:—Parks at Home and Abroad.

Boston has long been a noted city, not only of our own State but of the United States. Few things have given it a wider reputation than its magnificent "Common" of 50 acres, set apart by the wisdom of the early settlers and planted with trees. It has been the pride of Bostonians these many years, and now, while younger cities have set apart larger tracts and lavishly expended money in improving and beautifying them, Boston Common, with the addition of the "Public Garden," holds no mean place when compared with the parks of other cities. There can be no more delightful stroll on an early summer morning than from Beacon Hill to Copley Square through the Public Grounds.

In 1892 the Legislature of Massachusetts established a Parks Commission, to make provision for the future of Boston and its growing suburbs, and in securing about 4,000 acres in one body, embracing the region known as the Blue Hills of Milton, there can be no question but that they have acted wisely. When the barren spots shall have been planted with trees and shrubs, and walks shall have been constructed through all parts, and mother nature has had her way for a few years, assisted by man, this will become one of the grandest parks in the country. The poet, the artist, the lover of nature, whoever he may be, will here find satisfaction to his soul.

Until New York had its Central Park the metropolis of the United States had nothing to compare with Boston Common, but these 840 acres, upon which mints of money have been expended, have become one of the leading parks in the country, and no visitor to Manhattan Island fails to spend at least one day among the riches of nature and art there exhibited.

Fairmount Park of Philadelphia, containing nearly 3,000 acres, bordering two rivers, has natural advantages which are rarely excelled; adding to these the development and beautifying of many years, together with the fact that the great exposition of 1876 was located here, and Fairmount becomes national in its character. A writer says of it, "I have seen almost all the European parks of the great cities and there is not one that for original beauty can compare with Fairmount."

But "Westward the course of empire takes its way," and beside the beautiful waters of Lake Michigan stands the city that for a quarter of a century has been the wonder of the nation, and now is the wonder of the world. The years compassed by many of us have witnessed its entire growth. Not the least among its wonders are its parks, of which it has more than 2,000 acres. Jackson Park has become identified with the history of the world. To blot out the memory of it would efface from hundreds of thousands the one greatest event of their lives. But of this time forbids me to speak, and besides many of you saw it and the marvels it contained.

Scarcely a mile west of Jackson Park is Washington Park; in some respects perhaps it is unrivalled in the world. Certainly, in a somewhat extended trip through older countries, I saw nothing equal to the artistic effects produced with flowers and foliage plants in this park, and no hour spent at the Columbian Exposition was more thoroughly enjoyed than the hour at Washington Park. These artistic displays are said to be annually repeated with new designs and new beauty, so that the visitor to Chicago in 1894 will see as great beauty in this park, from June to October, as was seen in 1893.

Another notable park in Chicago is one named in honor of our martyred President, and situated in the northern part of the city, on the lake front. Lincoln Park contains 250 acres, beautifully laid out and ornamented, and is particularly noted for several fine works of art, one of which, the statue of Lincoln by St. Gaudens, is pronounced by some to be one of the finest pieces of modern sculpture in the world.

In our eastern or western cities it is comparatively easy to produce trees, shrubs, and flowers with the skill and labor money will command, but to reclaim a sandy, barren waste, where absolutely nothing grows, and where the winds of heaven drive hither and yon great banks of sand, as the winter's snows are driven over our New England hills, is quite another thing. Such, a few years since, was the condition of a large tract lying between San Francisco and the Pacific. This territory is some three or four miles in length and one-

half to three-fourths of a mile in width, containing over 1,000 acres. On much of it absolutely nothing formerly grew, as every changing wind produced a corresponding change in the surface. On other portions, less subject to change, there was a low growth of the poison oak, and perhaps other undesirable vegetation. Between this tract and the Pacific is a range of hills which protect it from chilling sea breezes.

> "Beyond the town, the bushy mounds between,
> Roll drifts of yellow, wrinkled sand—
> Uncrested waves, that dash against the green,
> Like ocean billows 'gainst the land."

The barren portion was first planted with wild lupine and a European sea beach grass, *Arundo arenaria*, to hold the surface from blowing about; then a species of pine and certain shrubs were set and watered, until their roots took possession of the surface and their tops furnished shade, giving other vegetation needed protection. Thus this unpromising tract has been conquered with all the stratagem of war. Its surface now gives no indication that immediately beneath the velvet lawns and flower beds, such as California alone can produce, there is nothing but sand. More than 100,000 trees of many species have been set, and the growth of a few years is simply astonishing. It is claimed there is now a greater variety of vegetable life here than in any other park in America. The situation of this park is perhaps unequalled for a climate peculiarly adapted for a great variety of plant life, as in the summer its contiguity to the ocean brings cool breezes therefrom, and in the winter the Japanese current brings the warm water of the ocean to these shores, softening the breezes as they are wafted upon the land, so that in the park it never freezes and is never sweltering. In the park, miles of the finest drives have been constructed; these are kept constantly watered and speed is regulated, except on one stretch of 6,000 feet, where Jehu is allowed full liberty. Several monuments have been erected here in memory of men of note; the finest of these is one erected to the memory of Francis Scott Key, author of The Star Spangled Banner, the late James Lick having left by will $60,000 for that purpose. This beautiful Golden Gate Park lies about four miles from the business portion of the city and is connected therewith by fine lines of street cars. Many thousands often visit it in a day, and find here a most charming spot for recreation, as there is nothing but beauty for the eye, and Saturday and Sunday afternoons a large band discourses the sweetest music for the ear. In fact, this park, with its drives,

walks, magnificent flowers, its finely kept conservatories, music, and other attractions, is almost worth a journey across the continent, especially at the present time, as it is the seat of the California Mid-Winter Exposition.

I am not unmindful of the parks of Baltimore and Washington, with their wealth of beauty and art, nor many other American parks which do honor to the cities where located and to our nation. To our own city and the work done in beautifying it and educating our people to become lovers of nature and co-workers with her in beautifying our homes and our landscapes, I propose to refer later.

Saturday, July 2, 1892, with others I landed at Queenstown and, as the sun was sinking behind the western hills, we went by rail up the valley of the Lee, eleven miles, to the city of Cork. Never was scenery more beautiful.

To us, just escaped from the restraints of a crowded vessel, old Ireland seemed like one great park, and two days later, as we journeyed 137 miles by rail, to Dublin, with flag, horn, and fire-crackers, giving the sons of Erin, who stood with mouths gaping wide, a faint idea of an American Fourth of July, we did not see much reason for changing our opinion. We were on the Emerald Isle and nature had done her part in making everything beautiful. I must add here, for the benefit of this society, that in Ireland we found the finest and sweetest strawberries we had ever seen. They were placed on the table without having the hull removed, and were eaten without sugar or cream; they were simply delicious.

In Dublin we visited Phœnix Park, which contains 1,750 acres, is beautifully laid out in drives and walks, shaded by luxuriant trees, and has several costly monumental piles, though the finest monuments in Dublin are generally located in the public squares. Lord Cavendish, Chief Secretary of Ireland, was murdered in this park, May 6, 1882, the day of his arrival in Dublin. The spot where he was slain is marked, and we felt an interest even in that, as a few days later we were to visit the beautiful estate at Chatsworth owned by the Duke of Devonshire, his brother, and the churchyard where his ashes were deposited.

Dr. Walsh, who travelled extensively in Europe, says of Phœnix Park,—"Viewing all the particulars which should distinguish a place set apart for public recreation, Phœnix Park, on the whole, would not suffer in comparison with any other in Europe."

The Wellington testimonial, a huge monumental pile near the entrance to the Park, the total height of which is 205 feet, with a

very broad base, struck me as having a certain beauty and grandeur in its massiveness, but it is spoken of by a writer much more capable of judging than myself as follows,—"It is an ungainly and ungraceful example of bad taste as the kingdom could supply."

A few days later, after passing the great natural parks, including Loch Lomond, Loch Katrine, and the Trossachs, we stood on Stirling Castle as the sun was sinking in the west and saw one of the most magnificent views possible for the eye to look upon. It was not a park as we use the term, but nature and man had combined to produce the effect. Mountain, hill, valley, castle, and monument, green fields and hedges, and even the fields of Bannockburn lay spread out before us. No wonder Victoria said, as she stood on the battlements and cast her eye over the beauty that lay spread out before her, "It is the fairest scene in all my realm."

We enter England; its green meadows, winding rivers, well-trimmed hedges, beautiful oaks, elms, and other deciduous trees, now rich in foliage, all combine to please the traveller.

The Duke of Devonshire is one of the richest men in England, having the inherited wealth of many generations. He is the owner of Chatsworth, where he spends a few weeks each year, but he kindly allows his palace and grounds to be enjoyed by the public, with only a few necessary restrictions. The palace, for it is nothing less, is in the midst of a beatiful park of 1,200 acres, on both sides the river Wye. In the luxuriant green meadows, dotted here and there by grand old trees that spread their giant arms, rich with foliage, to shade the quiet herds of cows and fallow deer so peacefully reclining beneath their shade, we had a scene worthy the finest landscape painter who ever drew the brush. The palace, through which we were kindly shown, is one of the finest in Europe. It is filled with the choicest works of art. The gardens outside are in keeping with everything else. The conservatory was planned and constructed by the wisdom of Sir Joseph Paxton, afterwards the architect of the celebrated Crystal Palace at Hyde Park, in which was held the great world's exhibition of 1851. The conservatory covers only about one acre of ground, but it contains some of the finest specimens of choice exotics from all the warmer countries of the world. The appliances for heating are said to be so arranged that each species flourishes in its own temperature without intervening partitions. The building contains seven miles of six-inch piping, chiefly used for heating purposes. Outside are some very fine fountains, one of which, named the "Emperor," in honor of Nicholas I. of Russia, who once visited the

Duke, is said to be the finest in the world. The day we were there the mother and sister of the Duke were visiting him, and all the waterfalls and fountains were playing in honor of the event.

There are special gardens of great beauty, the Oriental garden, the Italian garden, and the French garden, each with some peculiar features, all highly ornamented with works of art as well as by their beautiful and varied vegetation. In the orangery are splendid specimens of camellias, oranges, and rhododendrons; one of the latter, imported from Nepaul, has been known to have 2,000 blooms on it at one time.

From time to time this beautiful place has been visited by emperors, kings, and princes, from many countries, and some of the trees here growing were planted by royal hands.

Groups of statuary by noted sculptors adorn the grounds, and all that genius and wealth can procure have been gathered for these many years, until there is profusion seldom equalled, and all freely opened for a party of Americans to enjoy. Surely the courtesy of the Duke is commensurate with his wealth.

Before leaving this subject I must speak of the beautiful village of Edensor, called the "model village," situated within the park and occupied by the dwellings of the employés of the Duke. The houses are all neatly built and the grounds are adorned with shrubs and flowers. A tasty gothic church, with its spire pointing heavenward, adorns the green, and in the churchyard is the tomb of the late Duke of Devonshire and also that of Lord Frederick Cavendish, who was assassinated in Phœnix Park, as before noted.

In one of our trips we stopped at Stoke Pogis and visited the churchyard immortalized by Gray's Elegy. This really is within an immense park, in which the red deer were quietly grazing with no fear of man as an enemy. The walk from the highway through the churchyard to the church was lined on either side with the most beautiful roses we had ever seen in such quantities. They were of all colors and of immense size. In the yard were those "rugged elms" and "that yew tree's shade"; there, too, were "those mouldering heaps," and that "ivy mantled tower" still, perhaps, furnishes a resting place for the "moping owl." Doubtless, too, as the sun sank in the west, "the lowing herd came winding o'er the lea."

London has some famous parks and is somewhat famous for its parks. What would that immense city do were it not for these "breathing places!" How did it come to have so many? Royalty, wealth, and the Church have all contributed, either directly or indirect-

ly. Some of these tracts were formerly large preserves for game, where only royalty and wealth were allowed to roam and hunt. Hyde Park was once the property of a monastery and, if I remember right, was confiscated, and after many changes became public property.

St. James Park, once an uninviting tangle of wood and marsh, was given up to a community of lepers, not being considered suitable for anything else. Other parks, by the law of primogeniture, remained intact in the hands of one family for many years until wanted for park purposes.

But even London now needs more parks. One writer says, "Still as we well know, in the outskirts, those working men who love a country walk, turning up some narrow way can find a few fields to wander over; there you may see them on Saturday or Sunday with their sturdier children or perhaps with wife and baby too, taking a happy stroll; the little ones with pleasure gathering buttercups or running merrily on the grass." "Year by year these walks are turned into 40-foot streets, houses come, and the walks are gone." Surely, here is a lesson for each generation in Worcester.

For many years the monks held undisturbed possession of Hyde Park. After it became public, armies took possession of it during the civil wars, once so destructive in England, were reviewed in it, and marched through it on their way to the conflict. Later wealth and its votaries monopolized it; but now, in the process of evolution going on in society, it has become the grand resort of all classes, and armies of the common people, men, women, and children, flock thither daily in pleasant weather, especially on holiday occasions. One says of it, "With fine expanse of grass, its bright flower-beds, and clumps of shrubbery, its noble old trees, its beautiful ornamented lake, the Serpentine, its broad avenues crowded with equipages, its Rotten Row [*Route en Roi*, way of the king] alive with equestrians, its walks lined with thousands of loungers of various nationalities, professions, and grades of social position, Hyde Park, in the height of the season presents a scene which, in the brilliancy of its *tout ensemble*, and its peculiarly mingled contrasts can probably be paralleled nowhere else."

Adjoining Hyde Park are the Kensington Gardens, comprising some 600 acres, more thickly planted than Hyde Park, and containing avenues of rare plants and flowering shrubs. In these gardens are found many aged and venerable trees, giving, in some portions, the appearance of the last century.

Kew with its gardens and glass houses, some six or seven miles from Charing Cross, has many attractions. A French writer says,

"It is the finest botanic garden in the world." A large part of the plants here raised have to be grown wholly or partially under glass, hence there are many houses for this purpose, some of them very large, and one, the Palm House, is of itself a Winter Garden. In this house the problem of modifying and regulating the heat rays of the sun seems to have been solved by the use of colored glass. These grounds are free to the public and are largely frequented by the middle classes.

Regent's Park contains 470 acres and was used in Elizabeth's time as a hunting ground. It contains at the present time the gardens of the Zoölogical Society and those of the Royal Botanic Society. The latter holds meetings of great interest, for reading papers and discussing subjects connected with botany and kindred matters. Their gardens contain about 18 acres, in which are 4,000 or 5,000 species of hardy herbaceous plants flourishing in open air, and glass houses containing about 3,000 more. In May, June, and July floral exhibitions take place, and 3,000 medals are distributed, ranging in value from a few shillings to £20 each. One thousand pounds are annually spent in encouraging the growth and acclimation of rare plants. The Zoölogical Gardens contain one of the best collections of animated nature in the world. The individuals of this collection are kept under their native conditions as far as possible.

Besides the London parks already mentioned are many others, generally smaller than those mentioned, the whole within the Metropolitan District embracing over 3,000 acres.

Hampton Court Palace and grounds connected therewith, situated some 12 miles up the Thames from Hyde Park, are of great interest. In the court the grass is kept so as to make a perfect velvet lawn, and in this lawn designs are cut and filled with blooming plants, the tuberous begonias being used to perfection. Adjoining these grounds is Bushy Park, with its celebrated avenue, more than a mile in length, 200 yards in breadth, and lined on either side with five rows of magnificent horse chestnuts, very tall and rich in foliage. The horse chestnut seems to be a favorite shade tree, both in England and France, evidently growing with much more luxuriance than in New England. Near the palace is the celebrated "Maze," a labyrinth of walks bordered with shrubbery and flowers, and if one attempts to "thread" it he is very likely to seek aid that he may find his way out.

England, with its moist climate, is peculiarly adapted to the growth and maintenance of beautiful public and private grounds, and the tastes of the people, cultivated for many generations, lead them to

make the most of their advantages. Go where you may you see that nature and man have united to give beauty to the little garden patch, the broad field, the extensive park, and the grounds of wealth and royalty.

We go across the Channel into France and there is a change. You see the little cluster of cottages, with their red roofs huddled together with a church spire shooting up from their midst, always neat and tidy; but the broad acres do not have that park-like appearance we saw in England. Each peasant here, as a rule, tills his own acres, which are few, and the support of himself and family depends upon the number of francs he can realize from his toil, while in England the broad meadows belong to the landlord, whose wealth enables him to devote much to the beauty of the landscape. How fortunate it is that the eyes of the poor are as good as those of the rich, and they can drink in and enjoy in a great measure what the selfish heart might be glad to reserve for itself.

When Napoleon III. was on the throne of France he determined to add the charms of an English park to the attractions of Paris. The result may be seen in the beautiful Bois de Boulogne. The territory occupied by these gardens was formerly a forest, to which little had been done by the hand of man; but a great transformation took place. All that the skill of man could suggest, with unbounded wealth, has developed this tract into the finest public grounds of the finest city in the world. It is related of Mahomet that, journeying towards Damascus, he came in sight of the city and stopped, refusing to go forward, saying, "It is given man to enter but one paradise and if he enter one on earth he can never enter heaven." In going through the Bois de Boulogne one can feel the golden streets of the New Jerusalem can hardly be finer than this. The entire area of this park is said to be 2,158 acres, one-fourth of which is turf, one-half woods, 70 acres of water, and the balance shrubbery and flowers. Here are found the gardens of the Acclimatization Society, with their menageries, conservatories, and aquariums, all of which are largely visited by the populace seeking pleasure. A striking feature of the Boulogne is the grouping of vegetation for effect, by placing in one place conifers, in another magnolias, and so on, rather than attempting to make all points beautiful by mixing varieties. Some one says, "As a combination of wild wood and noble pleasure gardens the Bois is magnificent." So it is; and many other squares, gardens, and parks in Paris are magnificent, but in extent they are comparatively small.

The Luxembourge Conservatories are rich in rare plants, and in

the gardens classes are held for the study of gardening, fruit-tree pruning, etc., thus teaching practical horticulture.

The grounds of the Jardin des Plantes, which is a scientific institution, occupy about 75 acres, are open to the public, and are filled with rare plants. Here is found a museum of natural history, with its zoölogical gardens, its hot-houses and green-houses, its nursery and naturalization gardens, its collections for illustrating zoölogy, anatomy, botany, mineralogy, and geology. Its courses of lectures, by the most distinguished men of science, make it an institution of great eminence.

We cannot leave these foreign parks and gardens without speaking of one on one of the Borromean Islands, Isola Bella, in Lake Maggiore, one of those gems among the hills of northern Italy. Like the Duke of Devonshire, Count Borromeo opens both his palace, and his gardens to less fortunate mortals, without money and without price except the *pour boire* always expected by the servant who does you the slightest favor in a foreign land. The gardens are raised in terraces, ten in number, and they contain a large variety of plants, both domestic and foreign, so arranged as to give the finest effect. Oleanders luxuriate here in their own element, and are of immense size and of various colors. Here, also, we find vines of all kinds, the bamboo, cedar of Lebanon, and even the old friend of our boyhood, the American pine. One great swinging vine was quite a curiosity; a huge mass over a rocky grotto swinging out like an immense curtain. This reminds me that through Italy we saw many vineyards containing both the mulberry and the vine, the former trimmed down to close, thick heads, and the latter stretching from tree to tree, with the foliage and rich clusters of fruit swinging between.

But to come back to America. Our parks do not suffer in comparison with those abroad, when we consider the element of time. Few American parks are 100 years old and nearly all not much more than half that, while many of those on the other side are several times the age of ours, giving more time for those developments which take time. Of course, the old world is much richer in art, and its public grounds are more profusely adorned with statuary, fountains, etc., than ours, but, on the whole, no American need be ashamed of his country on this or any other account.

Many years since, the municipal authorities of our then infant city, in their wisdom, bought of Gov. Lincoln, an honorod citizen, the tract now known as Elm Park, and some years later he left by will a sum of money to be expended in improving the same. For this pur-

pose also the city appropriated money, and latterly this has been done annually; this has been expended by our Parks-Commission, of which the honored Secretary of this Society is chairman. Under his special direction, this tract has been improved and beautified until in its landscape gardening and the annual floral displays, so many of our citizens enjoy, we have a park of rare beauty and one that will not suffer in comparison with many more pretentious, in our own country and abroad.

The names of Davis, Salisbury, Bigelow, and Dodge, will be forever identified with our city on account of their munificent gifts of land for park purposes. Lord Hobhouse of England says, "This is a kind of charity that cannot demoralize, and cannot be abused or jobbed"; and we might add, it is a very fine way for one to build his own monument.

By wise action, our municipal government has secured for present and future generations most desirable tracts that will forever be held sacred for the public. Who, to-day, would deem it wise to part with Newton Hill, even though the proceeds thereof would build a fine city hall? The donors of Institute Park and Lake Park did not stop with the gift of the land, but Messrs. Salisbury and Davis have spent handsome sums in improving them. Without generous gifts or bequests park improvements must necessarily be slow, as but little can be expected annually from the appropriations, there are so many wants seemingly more imperative in a growing city like ours. Could more men of large means realize that wealth is a trust and use it more freely while living, generous sums might be placed in the hands of the city to create a fund, the income thereof to be used under the direction of our Parks-Commission, for park purposes. Such a fund once established would be likely to receive additions, from time to time, by bequests and otherwise, and the benefits derived from it would be like the sun and rain from heaven, falling on both the just and unjust, giving comfort, strength, and courage to the former, and encouraging the latter to better and nobler living. Our lives are largely formed by our surroundings. We know not the secret influences that mould our habits and characters. No person can associate with a noble character without becoming nobler himself. A love and appreciation of the beautiful grows as we come in contact with the beautiful. As our tastes are improved our lives are made better.

> "And this our life, exempt from public haunts,
> Finds tongues in trees, books in the running brooks,
> Sermons in stones, and good in everything."

Our lives, not exempt from public haunts, but familiar with them, especially in beautiful public parks, of which our Elm Park is one, should find tongues in trees, books in the flowers, and lessons in everything. A man takes his wife and children for a stroll through beautiful grounds on a Sunday afternoon; the little ones drink in and enjoy the beauty of their surroundings; the mother sees a rare plant and in a few weeks one of the same kind is found in her window or garden; the father gets a hint from what he sees, which bears fruit in his garden.

The good done by the comparatively small sum of money our Parks-Commission is able to spend from year to year can not be measured by dollars and cents. But suppose we take one item, the trees that have been set by them in our highways, and let each man who has one before his door, state the sum for which he would consent to its removal, and doubtless we should be astonished at the result. Could much larger sums be used annually on our parks, and could each be developed in the next ten years as much as it is likely to be in the next fifty years, the real estate owners of the city could afford to pay the entire expense and be sure of a handsome profit should they desire to sell. May the time soon come when our Parks-Commission will have abundant means at its command.

22d February, A. D. 1894.

ESSAY

BY

JAMES COMLEY, Lexington, Mass.

Theme:—My Visit to Japan; Its Chrysanthemums and other Flowers.

In 1858 I unpacked the first two cases of plants ever imported into the United States from Japan. They included some *Lilium auratum*, and six varieties of Retinospora, all grafted upon one stem, which had been cut from the tree and placed in damp soil to preserve the graft. This exploit in grafting excited my curiosity respecting the methods of horticulture in Japan, and I have ever since felt a strong desire to visit that country of the rising sun. Therefore it was with great pleasure that I accepted an invitation to accompany Francis B. Hayes, Esq., on his proposed trip to Japan. But now I have been there, I cannot be satisfied until I have been there again.

We left Boston Oct. 5, going via. New York to Chicago, thence to Omaha, and via Union & Central Pacific route to San Francisco. As we passed rapidly along, we saw many evidences of the wondrous enterprise of our people, especially as shown in agricultural and horticultural operations, involving not only hundreds but thousands of acres of land, in the country west of the Mississippi River. The grandeur of Nature's handiwork also engaged our attention.

We arrived at San Francisco Oct. 10, and were there five days, which I passed in visiting Golden Gate Park; Sutro Heights, the seat of Adolphus Sutro; Sherwood Hall, the estate of Timothy Hopkins —a costly and once beautiful home, but now a commercial garden, although the costly vases, statuary, etc., are still remaining upon the grounds. At the station near Sherwood Hall was an *Agave Americana*, in bloom, rising thirty to forty feet in height. A market garden, ten acres in extent, also near, showed every variety of vegetable, with

strawberries in abundance—a curious sight in October. Chinatown, in San Francisco, was also visited one evening.

We left San Francisco Oct. 15, on the steamship *Peru*, and for twenty days endured an exceptionally rough passage to Yokohama. This city is an interesting sight; rising from the water front, every street has plenty of trees, and the upper branches seem to fill every street above the buildings. No street cars or coaches were awaiting the passengers, but there was many a "rikisha"—a small chaise or gig—in charge of men, who draw their passengers wherever they wish to go. These men will pass over forty to fifty miles per day, drawing this carriage and passenger, and then appear as smiling and happy as if they had made no extra exertion during the day. They are always cheerful and obliging if well treated, and satisfied with fifteen cents per hour for their services. But if slighted, or imposed upon in the least, they not only resent it, but give notice, far and near, of the fact, with such description of the offender that it is difficult for that person to secure any further service from any of this class, wherever he may go. We found the Grand Hotel an excellent one, upon the European plan, but with American viands added to the bill of fare, even Boston baked beans being included. Yokohama is a city of temples and gardens—every family has one of the latter, even if only a very small one. While in Japan I made the most of my time, passing every morning in prospecting, thus gaining much information. Visiting the establishment of Louis Bœhmer & Co., I was invited to lunch, after which he conducted me through his extensive gardens and greenhouses, where everything was in perfect order, and all the stock at its best. Of the large stock of chrysanthemums, I found only one that I cared for, and bought, but selected many other kinds of plants. Observing across the bay a hill covered by foliage and surmounted by a large temple, I went to it one morning; two maidens at the temple entrance beckoned to me to approach. When near the steps, one maiden seized my right foot and offered a slipper to put on it, the other was at my left. I removed my boots, donned the slippers and entered the edifice, which astonished and delighted me by the magnificence of sculpture therein, which represented men, animals, birds and flowers, all executed in the highest style of art. On leaving the temple I noticed a Ginkgo tree on either side of the entrance. They were fifteen feet in diameter and stood one hundred feet high to the lower limbs. They were noble specimens, and their effect was grand. The Cliff Gardens is only one of many pretty spots near Yokohama. There I saw dwarf figures, composed of chrysanthemums, represent-

ing all kinds of character. There are some elegant specimens of *Camellia Japonica*, in every shade of color. They compose a hedge of flowers twenty feet high, six feet in diameter, and extending five hundred feet in length. It was a sheet of flowers when I saw it. Near by was a *Daphne odoratissima*, eight feet in diameter and full of buds; also beautiful specimens of umbrella pines and gardenias.

The Yokohama Gardeners' Association grounds cover 200 acres of land; include greenhouses and stores too numerous to mention, and the floral and nursery business is carried on in the most perfect manner. Palms, pæonies, plums, cherries, evergreens, magnolias, and all classes of shrubs are in cultivation; also 600 to 800 varieties of chrysanthemums, including about seventy altogether new ones, which I obtained. But the most curious feature of all, was the hundreds of thousands of dwarf trees from five to 500 years old, the most beautiful collection of its kind in the world. It is impossible to buy any plants from a private garden. The gentry are as proud as the most ancient of British nobility. It is necessary to cultivate personal acquaintance with the proprietor, who, if assured the plant desired is only for private use in another country, may present a specimen. I visited nearly 100 such places in Yokohama, and every commercial place of note, gathering one or two choice things in each.

Tokio, the capital of Japan, was the next point visited. There are many temples with grandly timbered grounds, where many children, with their dapper little mothers, meet and pass the hours in the happiest manner possible. The palace of the Mikado is a large and handsome structure, surrounded by most beautiful grounds. Tokio contains many other gardens scarcely inferior, all of which are carefully kept, and contain most curious trees and shrubs. The imperial gardens are difficult of access, even when the Mikado is absent. However, I managed to gain favor, and feasted my eyes on the vision of beauty for a time. Tokio abounds in elegant parks and drives, and possesses a museum which would put to shame many of those seen in Europe. In the great park may be seen almost every kind of animal known in zoölogy. The Imperial Botanic Garden contains one of the largest collections of named plants in the world. A botanical student, whom I met there, told me there were no less than 18,000 named varieties of plants in those grounds. Dangozaka, the great chrysanthemum garden, is on the slope of a hill. In this place it has long been a custom to arrange these flowers to represent living notable persons, also birds and animals, or to tell of some historical event. On entering the grounds, flags and bunting seem to invite the visitor

in a particular direction, and showmen say they have a display of skill to show. The faces of the persons represented are carved in wood or plaster, but all else is illustrated by arrangement of chrysanthemum flowers. They are done in this manner: A frame is made of bamboo; the flowers—still on the plants, which are arranged behind the frame—are drawn through the frame and held in place by a packing of moss; all the colors are used necessary to complete the costume and the character illustrated, and being still attached to the stems and roots of the plants on which they grew, which are invisible to the visitor, retain their freshness thirty days. This is a very popular exhibition, to which the populace go in crowds, as one of the great events of the year. Other places in the vicinity of Tokio which I visited were Megura, Asakusa, Simei-Iriya, Hanka Yen, Senzokumura and Kusubunat-Honjo. On Sunday afternoon, after leaving the chrysanthemum show, I came upon a large concourse of people, evidently holding a celebration. There were at least 60,000 men, women and children. Horse-racing, dancing and games were in progress, and all appeared delighted. As I drew near, a host of happy, smiling little girls surrounded me, apparently attracted by my size, which is much above that of the average Japanese. I never before saw so large a crowd so orderly in conduct. The Lotus gardens in Tokio cover seven acres of land—or mud. This flower is very popular there, as to that people it represents purity and virtue, single-mindedness and usefulness.

From Tokio I went to Nikho, a great city upon the rise of a hill, noted for its magnificent temples; and its picturesque situation upon a range of lofty hills affords a view of grand scenery. Nature was in her best garb; decked in the richest autumn tints. I counted twenty-four varieties of shrubs upon twenty-five feet square of ground, and felt sure there must be some valuable plants as yet undiscovered by us. I was carried up the mountain-side in a basket borne by four men. From one point I saw, at the foot of a ravine, a shrub covered with red berries, and climbing down to it, found it to be a strange variety of barberry. I gathered the fruit, brought it home, and have plants now growing for future use.

On another similar excursion I secured about one hundred varieties of seeds from plants growing there. In wandering about the city of Nikho, I sometimes found curious plants, and occasionally obtained one or more of them or the fruit. The next place visited was Mineosta, thence via. Shidyawa and Yagoya to Kioto, where we remained a week. It was once the capital of Japan, and is now one of

her finest cities. There we found the finest chrysanthemums, and secured some very handsome varieties, some novelties of a new class. I visited some great rice-farms and orangeries, also climbed the great mountains. There are many old temples. A new one, not yet completed, has cost $6,000,000. It is highly enriched with delicate carving, of most artistic design of floral and other character. On one farm are seen eight acres of *Lilium auratum*, five acres of *Caladium esculentum*, four acres of lotus—thirty varieties—and other crops were growing. I secured some of each of thirty varieties of lotus. Later, I saw six acres of pæonies, of all ages; three acres of young trees—plum, cherry, peach—being grown for shipment; also mulberry trees by the acre, for silkworm culture, which is a great industry in that section. In the mountain ravines oranges were very abundant. A side trip was taken to Sacco, to visit the finest chrysanthemum show in Japan. The show included thirty different classes, all ranged in booths of bamboo, each class by itself. Specimen plants were grown in many shapes, four or five kinds grown as one plant and trained to make a perfect pyramid of different colors. The varieties and classes were perfectly gorgeous. After a careful examination I decided what I should like to take away and proposed to purchase. But they refused to sell until I convinced them I desired them for private use, and should take them out of the country. But I could not have any I had seen; I must select from a field of them just back of the exhibition grounds, to which I was at once taken. There were plants seven to eight feet high, and flowers seven to fourteen inches in diameter. Making a careful selection from this stock I found I had 175 varieties, which with previous selections made 400 varieties of chrysanthemums, besides several hundred varieties of other kinds of plants, which were at once taken to Yokohama to be started on their way to Boston. Among the ornamental trees were some that were 50, 100, and even 200 years old. Some of these treasures I brought with me, others I expect will arrive in April. I sailed from Yokohama Nov. 29. A pleasant voyage of fifteen days brought us to San Francisco. After seeing my plants on board the train for Boston, I left on the Southern Pacific Railroad for Pasadena, and stopped at the Raymond Hotel, of which Colonel Wentworth—formerly at the White Mountains—is proprietor. The extensive grounds and greenhouses are under the superintendency of Charles H. Hovey—son of the late C. M. Hovey of Cambridge. The climate is favorable for permanent sub-tropical gardening and the grounds are admirably planned and managed. The greenhouses are in charge of James Barrett, formerly

of Cambridge, and the condition of the plants is most creditable to his skill. Mr. Hovey took me to Los Angeles, a more southern point, where palms are permanently grown in the open air, I saw them twenty to thirty feet high, and Araucarias thirty to forty feet high, a novel and pleasing sight.

I reached Chicago again Dec. 20, and came home direct, arriving in a snowstorm, which was in chilling contrast with the tropical climate and weather of California, so recently enjoyed.

Japan is a paradise for travellers; there every one has opportunity to practise the lost art of politeness. Civility is a common virtue, even among the lower classes. I mastered enough of the language in five days to get along fairly well. The guide books are excellent, and the rikisha men are intelligent and faithful attendants. The women are exceedingly submissive, attentive to your wants and pleasing in manner. They are shy, demure little dolls and always seem happy. They are good housewives. I was invited to take tea with several Europeans who have taken Japanese wives; in each case I found the children were well educated in English and music, and the mothers very accomplished. The home is very sacred in Japan. You can visit a residence, go into certain rooms, but the inner sanctuary you cannot enter.

In Yokohama there are about 6,000 Europeans, many of whom have married native women. The theatres of Tokio are grand. I was surprised by the size and beauty of the Imperial Opera House, and as much pleased with the music and dancing. Japanese gardens are the most fairy-like places. You see in them tiny trees and flowering plants, ponds, bridges, summer-houses, lanterns; here, dwarf pines six or eight inches high, but 125 years old; there, others one foot high, but 500 years old. In the garden of Yeiju-in—within the temple grounds—there are many pæony plants, mostly old, but one is 100 years old, and is eight feet high—quite a tree. Most of the soil of Japan is a rich peaty loam; this is interspersed with a yellow light clayey soil. Both are extremely fertile, and in each there seems to be planted that which is peculiar to that soil. The fertilizer most used is rice straw, cut into small pieces, as with a hay cutter. But cultivators depend mostly upon irrigation from the rivers, and most careful cultivation; not a weed nor a waste piece of land will be seen in a long railroad journey. The farmer utilizes every bit of land he possesses. But farm tools are very crude. The bog-hoe is the chief tool used; occasionally a black bull may be seen hitched to what is called a plough, but the implement is so small it looks like a toy.

With the hoe, the blade of which is four inches wide, the soil is turned over, left a few days exposed to the sun, then levelled and seed put in. Every crop but rice is planted in rows, straight as an arrow. Men and women work in the fields. I saw some rice-threshing going on. Young women and children drew the rice straw across the teeth of a saw-like blade, by which the seeds were dislodged. It is a matter of wonder to our gardeners, how it is the Japanese curtail the growth of plants as they do. After noticing the plants in Japan, and the appliances and treatment, and considering all observed circumstances therewith connected, it is my opinion that the glazed, or marble pots they use, and which are not porous, retain moisture longer without watering, and also make frequent repotting unnecessary. I mean to experiment on this line. One can learn nothing from the Japanese gardener about it; I noticed all over Japan that they use very finely sifted soil for potting, and press the soil down very firmly about the plant roots. They seem to understand the true art of watering plants, and this seems to me to be the main secret of their success.

Nature and Art go hand in hand in Japan. The people never try to appear other than they are, and they never force things; there is none of that eternal rush we have here. They never hurry, but are always industrious. They are perhaps the cleanest people in the world, taking a bath two or three times every day, with water almost at boiling heat. The bath tub is everywhere, in country and city alike. I visited several silk and vase factories, and was surprised to see the beautiful work done, even by children of five to ten years old. They were making vases and chinaware. Some pieces require eleven months to complete, because of the amount of labor, and time necessary for drying the work. They are equally skilful in needlework.

If any one would renew life, I say, go to Japan instead of Europe. In Japan there is rest and enjoyment, and the beauty of the country has no end. I never saw a chrysanthemum flower until I went to Japan, where everybody loves it. I visited five hundred places where it is cultivated. But these were only the principal gardens in a few large cities. Go to Japan!

1st March, A. D. 1894.

ESSAY

BY

MRS. A. E. HENDERSON, WORCESTER, MASS.

Theme:—Reminiscences of Land and Sea.

Would you, so the helmsman answered,
Learn the secret of the sea?
Only those who know its dangers
Comprehend its mystery.

On a flying trip across the Atlantic in one of our modern steamers, one does not always realize the tremendous power of the waves; but when you depend upon sails, you have plenty of time to see all the moods which old ocean can display—hurricanes, calms, waterspouts, etc. One experience of a West India hurricane would suffice for most people. A low barometer warns us to make ready for the approaching tempest. The sails are furled and every possible preparation made for the encounter. An ominous silence prevails on board, as we await the blast which strikes with such fury as to almost take away the breath. I well remember the shout of the Captain, "Down with everything." It seemed as though he could hardly speak, and then the fearful combat with the sea began.

I remember one time, when driving a horse, that he became frightened and ran for some distance. I wound the reins around my wrists and held on; when he was stopped, he stood still and trembled in every limb. I could compare the ship to nothing but that horse. It seemed, at times, as though she would stand still and every timber would tremble; then she would gather herself together and leap and plunge as though to get the better of those raging waters, which dashed on board claiming everything that had not been most securely fastened. I could hear the commotion on deck, as I quieted the two children in the stateroom. We could not remain in the cabin. The water was one

foot deep on the floor and everything that could get adrift was having its own way.

The storm lasted for twelve hours, but the sea had worked itself into such a commotion that it was three days before we could safely walk across the cabin floor. One of the children became weary of such close quarters, and ventured into the cabin, when he was violently thrown across the room, striking the sharp edge of a black walnut sofa, receiving a severe bruise. His impatience was checked, and he allowed himself to be amused in the stateroom until the waves had spent their fury. When we reached port we saw a ship with a large hole stove in her bow, which the crew had repaired sufficiently to allow of her reaching port. A barque had gone to the bottom, a few of the crew escaping. A large steamer had been sunk. In one of these dreadful encounters with the ocean you realize your helplessness. The highest ingenuity of man is as nothing. At times, his masterpiece of ocean craft is crushed by the waves and vanishes like a child's toy. Not long ago, one of our finest ocean steamers was boarded by a wave, damaging her so that she was obliged to return to port for repairs.

It is said that the depths of the ocean are free from the violent commotions which agitate the surface, otherwise the life of the innumerable inhabitants of the great deep would be most tumultuous.

One of the most trying things, when you are dependent upon sails, is a calm. To lie for days

> "As idle as a painted ship
> Upon a painted ocean,"

with the sun pouring down so fierce as to boil the pitch out of the decks; with the idle sails filled with no cooling breeze. In vain you walk the decks searching for a shady place. I think most seamen prefer a gale. The trade-winds are a delightful change, when you have been tormented with a lengthy calm. Then you become fascinated with the ocean, and sing of

> "A life on the ocean wave,
> A home on the rolling deep."

One of the most frightful things at sea is a fire. Once the cook after trying out porpoise oil, threw the scraps into the stove, which made such a blaze that a barrel which he had placed over the chimney to the galley caught fire, and when discovered was all ablaze. The cotton sails towered to the top of the mast directly over it. The second mate jumped upon the galley and, while the children and I held our breath, grasped the burning barrel and threw it overboard. With a cargo of

kerosene oil beneath our feet the contemplation of that blaze was anything but agreeable. It is a terrible thing to stand and see your property consumed by the flames on the land, but at sea when the flames get beyond control you have to choose between two elements. Those who have been placed in such an extremity invariably choose the water. I once watched a burning ship sailing down the Delaware. The pilot was about to leave when the captain invited him into the cabin. Striking a match to light a cigar, the gas which had formed in the closed cabin from the cargo of petroleum ignited, burning the ship.

The rigging of a ship is very hard for a landsman to remember. Some are surprised to find that the main sheet is a rope. Then there is the bonnet, waist, stays, braces, shrouds, martingale, etc.

While lying at a Cuban port the barque *Sarah Frazier* arrived from Europe; while on the voyage, in mid-ocean, the captain had lost his only son overboard. He was 16 years old, and had been brought up on the ocean so that he could navigate the ship as well as his father could. His watch was on deck at the time of the accident, which happened at midnight. His mother heard the cry, "Man overboard," and jumped up exclaiming, "It is Allie." It was very pathetic when they showed me the empty stateroom and unrolled the chart showing the pencil mark the boy had drawn indicating their course. How the accident happened was never found out. The captain told me the hardest thing he ever did was to fill the sails and leave his son out there in the ocean.

Some people are surprised to learn that you cannot anchor anywhere on the ocean. They do not stop to consider that the average depth of the ocean is four miles. In order to become a successful navigator you must have experience and know all the ropes as the sailors say, and the knowledge cannot be bought. A young man, whose father was possessed of wealth, had a ship nicely fitted out, which he undertook to navigate. Having but little experience he bought books of navigation and started on his voyage. They got underway all right and clear of the harbor. Elated with his success he turned to take a last look at the receding shore, when the wind blew a few pages over. When he consulted the book again he came to the order to let go the port anchor. The order on board ship is no sooner given than it is obeyed. The result was that the young man gave up the command to the first officer and went to the foot, and his experience, which money could not buy, was the road by which he became master of the art of navigation, which has been spoken of as the grandest outcome of

human genius and daring and enthusiasm. No one can read of our intrepid Arctic explorers without being thrilled with wonder at the courage and self-sacrifice which they have voluntarily undergone in the cause of science.

On a recent short ocean trip our party was seated on deck talking about the wonders of the great deep; I remarked that a row boat could be seen from the ship's deck at a distance of not over three miles. This was received with great incredulity. The young man who knows it all was standing near listening to our conversation. He was sure that was not so; he had been yachting the Summer before and he could see 40 miles on the ocean. To defend myself I sent for the first officer on board the steamer and asked him; he answered that if it was a very clear day, and you had good eyesight, you might see the row boat from a ship's deck at a distance of four miles. He also said the board of trade allowed them ten miles to see a steamboat. The young man who knows it all said he didn't believe a word of it, but he was very careful to speak so low that the officer did not hear him.

Years ago at an examination, which I took with others, one of the questions asked was, "What makes the ocean salt?" None of us knew. One of the committee explained that the rivers washed the salts of the earth into the ocean. If that is so, would not the rivers as they neared the ocean be salt? There is no instance of such being the case. Below New Orleans and Philadelphia ships fill their tanks with fresh water for a long voyage. It is said that the Amazon freshens the water a long distance at sea. If these immense rivers washed the salts from the land, how does it happen that the ocean is less salt where it receives these mighty waters? It has been found that the ocean contains a larger amount of salt where it is most remote from land. Whales could not exist in fresh water.

The Gulf Stream is the most important of the ocean currents. It flows from the Gulf of Mexico, at a distance of about 75 miles from our southern coast; here it is from 40 to 50 miles in width. It increases in width as it flows farther north, where it is met by the cold current from the Arctic ocean. The temperature is higher than the surrounding water through which it flows without mingling. If you draw a bucketful and put your hand into it, you will find it as warm as new milk. We have generally experienced rough weather while crossing the Gulf Stream. Many times the ice covered ships after vainly trying to enter our northern harbors return to these warm waters, where the ice all melts away and they are ready to try again, with perhaps better success.

The inhabitants of the great deep furnish a never ending source of entertainment to "Those who go down to the sea in ships."

> "I hear a sound amidst the washing of the tide;
> It glideth by our vessel now, wherever we do glide,
> 'Tis the whale—It is the shark! ah, see, he turns upon his side."

We passed several whales who seemed in no wise frightened, but remained around the ship for some time, every now and then coming to the surface to breathe. They seemed to be aware that we did not intend to attack them. Often the young whale is harpooned to secure the mother, who never deserts her offspring.

We met a young captain of a whale ship in Barbadoes, and later heard that he struck a whale with the harpoon and in paying out the rope it became entangled around his leg and he was drawn into the water. His body was afterwards found when the whale was again captured.

It was my good fortune, at one time, to see a whale on dry land at Provincetown. It was towed into the harbor and beached. People came from far and near to see it. It measured 80 feet in length.

Of the myriad inhabitants of the great deep the shark is the most voracious. From his attack no unarmed man can defend himself. I met a captain in the West Indies who had lost his mate overboard. He saw the shark bite him in two with one snap of his jaws. They have a number of rows of teeth, and are obliged to turn over when they seize their prey. They are found in all parts of the ocean, but attain their greatest size in the tropics, having been seen there 35 feet in length. They are often seen following ships, greedily swallowing everything thrown overboard, old boots being just as acceptable as anything else.

While in the West Indies we took the small boat and rowed to a fine beach to bathe in the salt water, a very risky thing to do, we were told afterwards, on account of the vicious sharks that frequent the place. We were told of a little child who trailed his hand through the water while in a boat, when a shark came alongside and bit his hand off. We took no more bathing excursions at that place.

At the mouth of the Rio de la Plata all hands threw out their lines and drew in fish as fast as they could bait their hooks. I was the only one on board who had no luck. Astonished that I got no fish I began to complain when, at that instant, I felt something tugging at my line. It was too heavy for me to pull in. The mate was standing near and I asked him to look over the railing and see what was pulling on my line. He did so, and reported that I had caught a shark. I

gave up the line and took myself out of the way. A harpoon was brought from forward and the shark was soon floundering upon the deck, snapping and biting at everything that was thrown at him in the most ferocious manner. After a while he was dispatched, and I kept a piece of the skin for a souvenir. The color is pale ash; it would answer for sand-paper. His presence accounted for my not catching any fish. He was contemplating my bait and it is very probable that the fish did not care for his company.

It has never been my good fortune to get a view of the sea serpent, although there are many instances on record of his appearance. In the museums are shown skeletons of gigantic animals which have not been known to exist since the time of history. It is possible that monsters may have previously existed in the sea as well as on the land. It is well known that the great species of the whale are not as numerous as in former times. It is said that there are serpents in the sea, but they are six feet in length. Eels are frequently seen of enormous size, sometimes weighing 100 pounds and ten feet in length.

In 1878 I saw a devil fish exhibited at a travelling show which came to Worcester. I read of a little boy playing on the beach in the West Indies when a devil fish reached out one of its long arms and carried the child into the sea. Fabulous stories are told of these sea monsters. Victor Hugo, in "The Toilers of the Sea," gives a vivid picture of an encounter with one of them beneath the sea.

Porpoise are often harpooned by the sailors. The meat is dark and one must be quite hungry to eat it. The liver and heart taste like those of a hog. They weigh about 250 pounds and in color are of a bluish black. Multitudes of them are seen leaping from the water at a height of five or six feet. Their presence is a sign that a storm is near at hand.

The Stormy Petrel or, as the sailors call them, Mother Carey's Chickens, are also noticed in stormy weather. They fly close to the water and have the appearance of walking on the waves, when in reality they are searching for food which is thrown up by the agitation of the ocean or that which may be thrown overboard. They fly very rapidly and many suppose they come around a ship for shelter. They are found hundreds of miles from the shore.

"Up and down! Up and down!
From the base of the wave to the billow's crown,
And amidst the flashing and feathery foam
The Stormy Petrel finds a home;
A home if such a place there be

For her who lives on the wide, wide sea,
On the craggy ice, in the frozen air,
And only seeking her rocky lair
To warm her young and teach them to spring
At once o'er the waves on their stormy wing."

We often amuse ourselves catching white Cape Horn pigeons with "bended pins for hooks." Immediately upon landing on deck they are seasick and stagger about for a moment as though dizzy. We caught one away out at sea with a pink ribbon around its neck. We wrote our names, latitude, and longitude on the ribbon and tying it around its neck parted with it, in hopes that some lonely voyager on the wide ocean might be amused as we had been.

In warm latitudes south of the Equator we have been surrounded with schools of flying fish. They spring from the water at a height of eight or ten feet, keeping on the wing for a few seconds, when they dip into a wave to wet their wings, in this manner flying for quite a distance. Although they were as thick as bees around the ship there was no way we could entice them on board. Sometimes they would fly on the deck in the night, and then the cook would surprise the most favored person on board with fried flying fish for breakfast. On the island of Barbadoes they are caught in large quantities in nets, and boneless flying fish is one of the delicacies which we remember in connection with that lovely isle. You have all heard of the young man, who, on his return from his first voyage, was asked by his mother to relate some of the sights which he had seen; he told her he had seen mountains of sugar, rivers of rum, and fish that could fly. The old lady said she could believe there were mountains of sugar and rivers of rum, but that she would never believe that fish could fly.

While at Sagua la Grande, Cuba, we took the boat and rowed to a beach which was covered with large shells. They were somewhat broken and faded, being exposed to the sun. The natives dive for the handsome pink-lined shells and eat the animal which inhabits them. It is very amusing to see these shells walking around on deck. One of the captains while walking on the beach picked up some small shells and put them in his pocket. Afterwards he called at his broker's office, and while sitting there talking they came out of his pocket and crawled up his coatsleeve, to the great amusement of a young lady who was in the office.

"The tiny shell is forlorn
Void of the little living will
That made it stir on the shore."

At Tripoli, on the coast of Syria, the shells are two feet deep; they could be carried off in cart loads. The surf at this place is tremendous. On a calm day, while walking on the beach picking shells, I looked up just in time to grasp the hand of one of the children and run to get out of the way. In a gale the height of the surf is tremendous.

"The fields and forests of our dry land," says an eminent naturalist, "appear sterile and empty if we compare them with those of the sea. Each kingdom skilfully imitates the other." On the Grand Banks the fishermen often draw up from the bottom imitations of vegetables and fruit, such as corn, lemons, etc. In the tropics every form of vegetation is represented beneath the sea; trees, flowers, shrubs, fruit, etc., in great variety and of contrasting colors. In crossing the Bahama Banks we could look down through the clear water and see the branches of coral, beautiful monuments of the little lives that have formed so many islands which are now inhabited by mankind. No language can describe the magnificence of these wonders of the deep. On the music shell the notes are written with striking exactness. Perhaps the sirens, when they charmed the sailors with their bewitching melodies, read their music from the notes written upon these shells.

The luxuriant tropical vegetation of the West Indies is something that we cannot imagine. The wonderful variety of fruit, the sapodilla, custard apple, pawpaw, guava, from which delicious jelly is made, shaddock, or forbidden fruit, star apple, sour sop, tamarinds growing in long pods, hanging from the tree in clusters. The mango tree is very common, the foliage dense, affording a most refreshing shade from the tropical sun. The cocoanut, orange, and banana are everywhere, and form the principal food of the natives. The flowers would delight the eyes of those who frequent this Hall. The choicest varieties are in profusion. We sat beneath the shade of oleander trees. Coffee has a beautiful white blossom. In sailing among these islands one would imagine he was looking upon fairy land. We visited Cuba, Hayti, Dominique, Granada, St. Vincent, Trinidad, and Barbadoes. Cuba was the least interesting to look upon, being low; Hayti is all mountains.

On a voyage from the Mediterranean to Buenos Ayres we sailed down the west coast of Africa, passed the Madeira, Canaries, and Cape Verde Islands and entered the region of equatorial calms, or doldrums, where we experienced calms, squalls and heavy showers, and found the oppressive atmosphere most uncomfortable. This region is noted as being one of the most disagreeable places at sea.

The emigrant ships from Europe to Australia, in former times, were obliged to cross it and passengers, in feeble health, suffered from the depressing influences, and oftentimes found a watery grave in this burying-ground of the ocean. Right glad were we to leave this place and enter the southeast trade-winds, where our drooping spirits revive and the oppressive sensations disappear. We are leaving the sun to the north of us. When we commenced our journey the sun shone into the forward cabin door; when half way it shone into the after cabin door. Long ago we had lost sight of the North Star, and the brilliant Southern Cross now beckons us on our watery way.

While at Matanzas we hired a volante and drove to the Cave of Bellamar. It is one of the most beautiful caves in the world, the discovery of which is most interesting. A negro, while at work on his master's plantation digging limestone, felt his crowbar slip through his hands and disappear from sight. In alarm he went to his master and told him what had happened. They dug around the crevice and soon peered into a deep, dark hole. Obtaining a rope and lantern the owner was let down into the bowels of the earth, and found himself in an immense temple, 1,500 feet in length, 200 feet wide, and 100 feet high, glittering on all sides and overhead with magnificent crystals, formed by the combination of water and lime. Mr. Santos Parga arose to the surface satisfied that the most valuable part of his property was beneath his feet. The cave had been explored for the distance of three miles when we visited it. The guide with a lighted torch, after burning a scorpion which he noticed crawling upon the doorway, led the way down the steps which had been erected to the bottom of the cave. We were speechless with wonder when we found ourselves in such a vast hall amid so much beauty. The stalactites and stalagmites meeting, forming immense columns. Articles innumerable were represented, which glistened like diamonds as the guide waved the torch, including an organ, embroidered garment, and a confessional. There were millions of fantastic shapes, so we thought it no harm to take a souvenir. In breaking a small piece the cave rang with the reverberations. The guide remonstrated with us, but as we could not understand Spanish his jabbering was wasted. He had us in his power, however, for had he extinguished the torch we would have been in total darkness. A lady in our party wrapped her handkerchief around the specimen she appropriated and broke it off without making any sound. Why we were not allowed to take any was because they wished to sell most exquisite specimens in small

boxes, for which the price was only eight dollars. Matanzas connects with Havana by rail, and a visit to that place is well worth the trip.

In sailing through the Straits of Gibraltar, where the mountains of Europe seem to rival those of Africa, the most remarkable object that meets your wondering gaze is the Rock itself, rising abruptly from the low sandy isthmus which connects it with the main land of Spain. The Straits are 36 miles in length and 13 miles wide in the narrowest part. The current always sets towards the Mediterranean Sea, running at the rate of three miles, giving one the impression that the vast Atlantic had forced its way through this narrow opening in spite of every obstacle. This remarkable inland sea is said to be salter than the ocean and has no visible outlet. There is supposed to be an undercurrent flowing into the Atlantic. The evaporation here is known to be very great, owing to the heat from the deserts. Sailing ships must wait for a levant, or easterly wind, before attempting to pass from the eastward. At one time we, in company with 250 sail, were 14 days lying off and on back of the Rock before we could enter the Straits.

Can we ever forget the grand sight as we looked, for the first time by daylight, upon Gibraltar, that almost isolated rock rising to the height of 1,470 feet, three miles in length from north to south, and three-quarters of a mile wide? The view from where we lay at anchor bore a striking resemblance to a huge lion looking towards Spain. I have since seen a magnificent painting of the lion view at Wellesley College. On a nearer approach the resemblance to a lion gradually fades away and a steep perpendicular height is presented to our view. I have seen the rock from different approaches, but its first appearance is the one that will be forever fixed in my memory. The city which lies spread out before us is indeed founded upon a rock. We cannot realize that instruments of death are looking out at us from every available point, so calm and peacefully reposes this monster at the doorway of the Mediterranean. The next morning we were on shore bright and early to take a jaunt on Gibraltar. First, we procured a carriage and drove to the neutral ground between the Rock and Spain, which is a low sandy isthmus 1,000 yards wide. I read in the paper, not long ago, of some Spanish women who came onto this neutral ground to sell their goods. The goods were confiscated. The next day the women returned with their friends and demanded the goods, which were refused. They then attacked the place where they were stored, and became so furious that the militia was called out to drive them away. After driving upon the beach we passed through the city and drove to Europa Point, on which the lighthouse is situated. From

there we drove to where the guides whom we had engaged, with their donkeys, were waiting to pilot us up the rock. The path was zigzag, and so narrow part of the way that we trembled for fear the donkey might make a mis-step and throw us down the steep sides. We saw beautiful flowers of every variety growing along the sides of the Rock, and frequently stopped the guide, who was leading the donkey, and sent him to gather lilies, whose fragrance we could not pass. Every shrub was in bloom. Lizards were crawling around everywhere. About half-way up we alighted and entered the cave of Saint Michals. The main entrance was closed by the government, as several have entered this cave and never returned. One might easily lose his footing and plunge down the yawning abyss that gave back no sound when a stone was dropped into it. We broke off some stalactites and mounted our donkeys to proceed upwards, and after a most romantic trip reached the signal station at the top of the Rock, where was stretched before us a most magnificent view. The snow clad mountains of Spain, the blue Mediterranean, and the mountains of Africa. We looked through the powerful glass through which the name of every ship that passes the Rock is read, and then partook of some bread and cheese with English ale, which was procured at the top of the Rock. The keeper introduced us to his little son who was born upon this elevated height and named "Gibraltar." They called him Gib for short. He ought to become a poet, looking out upon such grand scenery every day of his life. It must be an inspiration to gaze upon such grandeur. It is said that scenery influences character. "Switzerland is a country of mountains and of heroes. While the inhabitants of low and level countries, especially on the plains of Russia and Asia, submit to oppression and never dare like mountain-bred men to break their fetters." While visiting Niagara, a few years ago, I said to the driver of our carriage, I suppose you grow weary of constantly viewing this wonderful cataract. "No," said he, "I never am tired of looking at the Falls and often, when business is dull, I go down and look at them." After we had rested we began to descend Gibraltar, and entered the extensive galleries, filled with guns, which were drilled out of the solid rock.

We went into St. George's Hall, which is also drilled out of the solid rock and filled with guns pointed in every direction. Often the officers clear the hall and invite their ladies there to dance. There is another hall similar to this, named Cornwallis. After walking through galleries until tired, we rode to a precipice where we dismounted and seated ourselves to witness a sham battle on the plain below, which

was most exciting. All the manœuvres of a real engagement were gone through with, breastworks thrown up, rifle-pits dug, powder burned. The enemy were engaged and routed just as in a real battle, only there were no dead and wounded left on the field. When the fight was ended the soldiers all jumped up, fell into rank, and marched to town. There were between five and six thousand men engaged in this sham battle. As we stood and watched them pass, it seemed as though there was no end to red-coats. They were accompanied with bands of music and looked tired and dusty. We were very fortunate, being on the Rock at this time, to witness this sham battle. Gibraltar is shut off from all communication at seven o'clock by heavy iron gates. We passed through the gates a few moments before seven to our floating home. As we sat in the comfortable cabin, wearied with sight-seeing, we felt repaid for all the inconveniences we had suffered on our voyage across the stormy Atlantic in March.

The city of Genoa presents a fine appearance from the sea. It is in the form of an amphitheatre rising five or six hundred feet, and in the distance the mountains lend their charm to the beautiful picture. The harbor is formed by two moles about eighteen feet high. A steam tug came to our assistance, and we were soon in the commodious harbor amid a perfect forest of shipping. The bells were merrily ringing for church. They had a sweet, silvery tone, and kept up a constant jingling throughout the day. Genoa is called the city of palaces. The king's palace has 150 rooms, gorgeously furnished with hangings of velvet and floors of marble, elegant pictures, etc. We could here appreciate the song "I dreamt that I dwelt in marble halls." Another palace has 365 windows. Every day in the year you can look out of a different window. The cathedral of San Lorenzo was built in the 11th century. It is of black and white marble. The Annunziata has recently been restored. The whole interior fairly glitters with gold.

The new part of the city is very fine. It is a delight to walk in the public garden where the better class resort. The streets are so narrow in the old part that carriages cannot pass through. The buildings are very high, shutting out the sunlight. There is a celebrated bridge, connecting two hills, which leads to a church. The houses are seven and eight stories high, but this bridge is far above them. In walking out one day we noticed the people run and look over the bridge. We also looked over and saw a man lying dead on the pavement far below. It gave us such a shock to see the man lying there dead, that we took pains to inquire what had caused him to take such

a fatal leap. We were told that it was "an affair of the heart." Here was an illustration of the rashness of the Italian nature.

Genoa has long been celebrated for its handsome women. I was disappointed and came to the conclusion that I was a poor judge of beauty. I have seen just as handsome ladies in Worcester. The men, rich and poor, are obliged to drill in the army for five years, and are noticeably fine looking. At the art studio we saw a fine painting of Columbus leaving his little son with a monk previous to his setting out on his voyage of the discovery of America. A beautiful monument of pure white marble was erected in 1862 to his memory. He was born fifteen miles out of the city in a small stone-house on the seashore.

La Spezia is a rendezvous for men-of-war and is one of the chief naval stations of Italy. The scenery of the gulf is very beautiful. We saw the stars and stripes flying from an U. S. war ship which was harboring here.

Leghorn, or Livorno as the Italians call it, is quite an important place. The land all about it is low and marshy, quite different from Genoa, which is all up and down. Conspicuous on the wharf is a monument of one of the king's sons with four black pirates from Tunis chained at his feet, all in bronze. The pirates destroyed a great deal of the commerce, and the king's son volunteered to go in search of and capture them. The rule was, if any ship entered the port without raising the flag of Italy the offender should have his head cut off. The son was so rejoiced at having captured the pirates that he entered the harbor forgetting to hoist the colors. He was beheaded, and this monument was erected to his memory by the people. At this place we supplied ourselves with Leghorn hats. The women beggars were seated on the steps of buildings industriously knitting stockings. The children were nibbling at pumpkin seeds, which are on the stands for sale just as peanuts are here. We loaded here with a cargo of marble from the mines of Carrara. Part of it was in blocks weighing five or six tons.

Procuring a carriage, we drove from Leghorn through a level tract of country containing wheat fields, groves of pine trees, mulberry trees, and grape-vines to Pisa, situated on the famous Arno River, which flows through one of the loveliest valleys in Italy. Long before we reached the city we did not need any one to tell us that what we saw in the distance, conspicuous above everything else, was the celebrated Leaning Tower; one of the seven wonders of the world. The walls of the city are five miles in circuit. When we reached the

gate the officers looked into our carriage to see if we had any contraband goods. There is a heavy fine for smuggling salt and tobacco. Driving over one of the bridges which crosses the Arno, we made no delay in ascending the tower, where we had a most charming view of the surrounding country and the mountains in the distance. A great many people have thrown themselves from the top of the tower, so less than three are not allowed to go up at once. It is simply frightful to look down and I should not wonder if some have become dizzy and fallen without intending to commit suicide. The tower contains a chime of bells, is 178 feet high, and leans 15 feet from the perpendicular. Many suppose it was built in this manner, others are of the opinion that it has gradually sunk, which is the most probable. I read of an old lady and gentleman, who had gone a long distance out of their way to see this wonderful piece of architecture, when it was pointed out to them the old gentleman said: "So this is the famous tower of Pisa! Well, it's the most out of plumb thing I ever sot eyes on. I wouldn't get the contractor to build me a hen-coop!" We were charmed with the baptistery, which is also built of marble, and one of the most celebrated in the world. Its shape is circular. At the top of the dome is a statue of St. John. The interior is very beautiful, and has a wonderful echo. The guide sang one or two strains and it seemed as though there were a whole choir of voices flooding the building with most delicious music. Pisa is noted as being the birthplace of Galileo. In the cathedral is the swinging lamp that gave him the idea of a pendulum. We visited the cemetery, which is very ancient. It contains fifty vessel-loads of earth brought from Jerusalem.

One of the greatest blessings to the mariner is the lighthouse. Since 1830 the nations have rivalled each other in lighting up the dangerous coast. Ship-masters have books of information describing the peculiarity of each light. Some are stationary. Some places have two and three lights, as the twin lights of Navesink and the three lights of Nausett. Some are revolving, like Fire Island light. Some flash, like Barnegat light, which can be seen twenty miles. The distance which a light can be seen depends upon the atmosphere. In the Mediterranean, where it is very clear, it can be seen at a greater distance than on our coast. After being baffled and beaten and blown about on a long voyage across the stormy Atlantic in March, how welcome have been the harbor lights! We cannot estimate the number of lives that are annually saved by these warning beacons which everywhere light up the perilous coast.

"Not one alone; from each projecting cape
And perilous reef along the ocean's verge
Starts into life, a dim gigantic shape
Holding its lantern o'er the restless surge.
And the great ships sail outward and return,
Bending and bowing o'er the billowy swells
And ever joyful as they see it burn
They wave their silent welcomes and farewells.
Steadfast, serene, immovable, the same
Year after year through all the silent night
Burns on forevermore that quenchless flame,
Shines on that inextinguishable light.
A new Prometheus chained upon the rock,
Still grasping in his hand the fire of love.
It does not hear the cry nor heed the shock
But hails the mariner with words of love.
Sail on! it says, sail on, ye stately ships!
And with your floating bridge the ocean span;
Be mine to guard this light from all eclipse,
Be yours to bring man nearer unto man!"

I remember, when a child, an old time citizen of Worcester, who frequently visited my father's house, who said there were two things he could never be persuaded to do—he never would cross the suspension bridge at Niagara Falls, and he would never cross the ocean. I remember thinking, child as I was, that if the opportunity ever came to me I would cross them both. Years ago, the old time citizen crossed that bridge to the unknown country from whence no traveller has returned. I believe that a beacon light illumined the way, so that he had not a single fear. If we are guided by the "Light of the World," when we have finished the voyage of life and are called to go aloft, it will make little difference when the summons comes whether we are on the sea or on the land.

OFFICERS AND COMMITTEES
OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1893-94.

PRESIDENT:

HENRY L. PARKER, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; O. B. HADWEN, of Worcester.

SECRETARY:

EDWARD WINSLOW LINCOLN, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Joseph Lovell,	Medfield.
James F. Allen,	Worcester.	Edward L. Davis,	Worcester.
Henry Woodward,	"	Henry Reed,	"
William T. Merrifield,	"	Henry Phelps,	"
William H. Earle,	"	James Draper,	"
H. M. Quinby,	"	F. M. Marble,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
John D. Lovell,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	S. H. Record,	"
*William Eames,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	John L. Peters,	"
Joseph Brierly,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward,	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"		

STANDING COMMITTEES.

ON FINANCE:

Edward W. Lincoln, 1894. Nathaniel Paine, 1895. George E. Francis, 1896.

ON LIBRARY AND PUBLICATION:

Edward W. Lincoln, Adin A. Hixon, George E. Francis.

ON NOMENCLATURE:

James F. Allen, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, F. M. Marble, Charles Greenwood, Edward W. Lincoln.

ON ARRANGEMENTS AND EXHIBITIONS:

James Draper, *Chairman.*

Calvin L. Hartshorn, Hermann F. A. Lange, O. B. Hadwen, Adin A. Hixon, Charles Greenwood, F. M. Marble, O. B. Wyman, Charles E. Parker, F. A. Blake, H. B. Watts, J. L. Peters, George C. Rice, Edward Hall, William H. Johnson, with *President* Parker, and *Secretary* Lincoln.

AUDITORS.

Henry L. Parker, Fred. H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.:

William H. Johnson.

ON FRUITS, ETC.:

James Draper.

ON VEGETABLES, ETC.:

Charles Greenwood.

* Since deceased.

SCHEDULE OF PREMIUMS

OFFERED BY THE

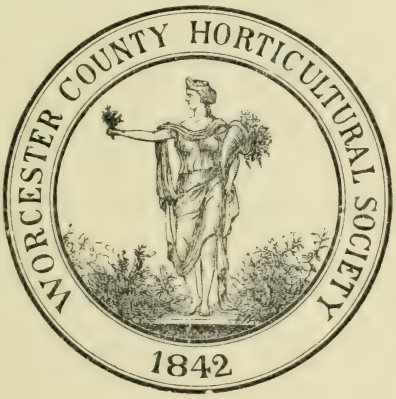
WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR

1894.

The attention of Exhibitors is particularly called to the Rules and Regulations, General and Special.



Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 Main Street.
1894.

COMMITTEE
ON
ARRANGEMENTS AND EXHIBITIONS.

JAMES DRAPER, *Chairman.*

O. B. HADWEN,
F. M. MARBLE,
O. B. WYMAN,
CALVIN L. HARTSHORN,
CHARLES E. PARKER,
EDWARD HALL,
ADIN A. HIXON,
FRED. A. BLAKE,
HERMANN F. A. LANGE,
CHARLES GREENWOOD,
H. B. WATTS,
J. L. PETERS,
GEORGE C. RICE,
WILLIAM H. JOHNSON.

President, - - HENRY L. PARKER.

Secretary, EDWARD W. LINCOLN,
Nos. 5 Oak and 18 Front Sts.

JUDGES OF AWARD.

FLOWERS, PLANTS, ETC.—William H. Johnson.
FRUITS, ETC.—James Draper.
VEGETABLES, ETC.—Charles Greenwood.

COMMITTEE ON NOMENCLATURE.

James F. Allen,
Hermann F. A. Lange,
George E. Francis,
O. B. Hadwen,
James Draper,
Charles Greenwood,
F. M. Marble,
Edward W. Lincoln.

GENERAL RULES FOR ALL EXHIBITIONS.

A. Strict conformity to the Regulations and Rules will be expected and required, as well for the benefit of Exhibitors as for the convenience of the Officers of the Society.

B. Correct and legible names must be attached to each and every Flower or Plant entered in a class of named varieties.

C. All articles offered for premium must remain within the Hall throughout the hours of Exhibition, unless special permission for their removal shall be granted by the Committee on Exhibitions, etc.

D. All *Small Fruits* must be entered in boxes or baskets (except in the case of Strawberries or Currants, which are to be shown "*flat*") ; but they may be displayed subsequently in plates or dishes, at the taste of the exhibitor.

E. No person shall take more than one premium, under the same number.

F. The Judges may correct, before the close of any Exhibition, awards made by them, if satisfied that such were erroneous.

G. The cards of competitors shall be put, reversed, beneath the plates ; and the Judges of Award shall be excluded from the Hall of Exhibition until the Exhibition itself is ready for judgment.

H. Competitors are expected to conform strictly to the conditions under which articles are invited. Evasion or violation of them may be reported to the TRUSTEES for future disqualification of the offender.

RULES AND REGULATIONS.

1. Exhibitions will be held on Thursday, March 8, April 12 and May 10. Commencing June 7, there will be Exhibitions every Thursday, excepting July 5, until and including October 25, A. D. 1894. The hours of Exhibition will be between 3 and 4.30 o'clock. Articles offered for premium must be in the Hall by 2.15 o'clock P. M. of the days of Exhibition. Between 2.15 and 3 o'clock the Hall will be in exclusive charge of the Secretary and the Janitor, who will allow no one else to be present. The Judges of Award may be admitted under the limitations of GENERAL RULE G.

2. Competition for premiums is open to all ; but a discount of one-third of the amount will be made from awards to persons who are

not members of the Society; and it is strictly required that all specimens offered for premium shall have been grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least two (2) months previous to the date of exhibition.

3. After the articles are arranged they will be under the exclusive charge of the Judges, and *not even the owners* will have liberty to *remove* them until the exhibition is closed; when they will be delivered as the contributors may direct.

4. No cards of a business nature will be allowed in any exhibition.

5. Where a certain number or quantity of Plants, Flowers, Fruits or Vegetables is designated in the schedule, there must be neither more nor less than that number or quantity of specimens shown; and in no case can any other varieties than those named in the schedule be substituted.

6. It will be the duty of the Judges to *exclude from competition all inferior specimens.* Also, all such *Designs* as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making Awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

7. The Committee on Arrangements have power to change the time of exhibition for any article, if an earlier or later season renders such change necessary; and the Secretary is requested to give notice of one week, in some daily paper, and also at the preceding exhibition, when a change in the Schedule is proposed.

8. All articles offered for premium must be correctly named. Indefinite appellations such as "Pippin," "Sweeting," "Greening," etc., will not be considered as names. Any person exhibiting the same variety of Fruit or Vegetable, under different names, or exhibiting as grown by himself, Flowers, Fruit, or Vegetables grown by another, thereby violating the objects and rules of the Society, shall be debarred from competing for the Society's premiums until reinstated.

9. No Flowers, Plants, Fruits or Vegetables will be entitled to a premium unless they possess points of superiority; and the Judges are *strictly required* to withhold premiums if, in their opinion, the articles exhibited do not merit them; nor shall any specimen for which a premium has been once awarded, receive another during the season.

10. Competitors will be required to furnish information as to their mode of cultivation, and to present specimens, for trial and examination, if requested.

11. In all exhibitions of Cut Flowers, for competition, the use of foliage must be restricted to that of the varieties shown; and not more than three blooms, clusters, sprays or spikes, all which shall be of one color, and of one variety, shall be allowed in the same bottle, or vase, except when otherwise specified in the schedule.

12. No Judge shall award a premium or gratuity in any case wherein he is a competitor, or has an actual or resultant interest; in any such case the judgment shall be rendered by any three of the Committee on Arrangements and Exhibitions whom the Judge shall invite.

13. No Judge shall require anything of competitors respecting their exhibits, which is not distinctly specified in the schedule. No Flowers, Fruits, etc., etc., shall be put on the tables, for competition for premiums, by any person who is a judge as to the awards to be made for Fruits, Flowers, etc., etc.

14. The standard number required for an exhibit, whether of Fruits or Vegetables, will be twelve (12); unless otherwise specifically declared. The usual limit of measure, save for SMALL FRUITS, will be a half-peck.

15. All premiums that are not claimed within three months after the close of the official year shall be forfeited to the Society.

16. The awards will be made known as soon as the cards can be filled out and placed upon the tables.

17. "Downing's Fruits of America," revised edition, will guide the Judge of Fruits in his decisions upon matters at issue.

☞ The judges are authorized by the Trustees, to invite the assistance of competent and discreet persons in the discharge of their duties.

FLOWERS, PLANTS, FRUITS & VEGETABLES.

A. D. 1894.

☞The Committee on Arrangements and Exhibitions would direct the earnest attention of the Judges to *Rule 6!*

6. *It will be the duty of the Judges to exclude from competition all inferior specimens. Also, all such designs, as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.*

FLORAL. Special Rule.—In all cases where dimensions are prescribed for exhibits, the measure shall be understood to be that of the flowers solely; never admitting the basket, foliage, or any garniture of green.

Thursday, March 8.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

HYACINTH,—in bloom.—					
No. 1.	One plant, two premiums			$1 00	50
No. 2.	Six plants, four premiums	3 00	2 00	1 00	50
PRIMULA SINENSIS,—in bloom.—					
No. 3.	Four plants, four premiums	3 00	2 00	1 00	50
No. 4.	One plant, two premiums			1 00	50
PRIMULA,—any other variety, in bloom.—					
No. 5.	Four plants, four premiums	3 00	2 00	1 00	50
CINERARIA,—in bloom.—					
No. 6.	Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
CYCLAMEN,—in bloom.—					
No. 7.	Four plants, four premiums	3 00	2 00	1 00	50
No. 8.	One plant, three premiums		1 50	1 00	50
CARNATION.—					
No. 9.	Cut blooms, with foliage. Display in Vases, four premiums	3 00	2 00	1 00	50

ARUM (RICHARDIA),—IN BLOOM.—

No. 10.	Best collection; grown in a pot, or tub, not exceeding 16 in. in diameter, four premiums	3 00	2 00	1 00	50
No. 11.	One bloom, with foliage (the largest), two premiums			1 00	50

AZALEA INDICA,—IN BLOOM.—

No. 12.	One plant, two premiums			3 00	2 00
No. 13.	Three plants, four premiums	5 00	3 00	2 00	1 00

CUT FLOWERS.—

No. 14.	Twenty blooms (clusters, sprays or spikes in vases), four premiums	3 00	2 00	1 00	50

BOUQUET—(HAND).—

No. 15.	Not more than 9 in. in diameter four premiums	3 00	2 00	1 00	50

APPLE.—

No. 16. Any variety, named, gratuity.

PEAR.—

No. 17. Any variety, named, gratuity.

VEGETABLE.—

CABBAGE,

No. 18.	Brunswick, 3 specimens, three premiums	$1	50	1 00	50
No. 19.	Red, 3 specimens, three premiums	1	50	1 00	50
No. 20.	Savoy, 3 specimens, three premiums	1	50	1 00	50

CELERY,

No. 21.	Six specimens, three premiums	1	50	1 00	50

SQUASH,

No. 22.	Bay State, 3 specimens, three premiums	1	50	1 00	50
No. 23.	Hubbard, 3 specimens, three premiums	1	50	1 00	50
No. 24.	Marblehead, 3 specimens, three premiums	1	50	1 00	50

TURNIP,

No. 25.	Swede, Yellow, 6 specimens, three premiums	1	50	1 00	50
No. 26.	Swede, White, 6 specimens, three premiums	1	50	1 00	50
No. 27.	White Egg, 12 specimens, three premiums	1	50	1 00	50

BEET,

No. 28. Turnip, three premiums 1 50 1 00 50

CARROT,

No. 29. Intermediate, three premiums..... 1 50 1 00 50

LETTUCE,

No. 30. Six heads, three premiums 2 00 1 50 1 00

Thursday, April 12.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly sudmitted.*

CUT FLOWERS—BASKET.—

No. 31. No restrictions, four premiums....$3 00 2 00 1 00 50

ZONALE GERANIUM,—IN BLOOM.—

No. 32. Four plants, distinct in color, four premiums..... 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 33. Twenty vases, not to exceed 5 blooms, clusters, sprays or spikes in each, four premiums 3 00 2 00 1 00 50

HYACINTH.—IN BLOOM.—

No. 34. Twelve plants, not less than 6 varieties, four premiums 4 00 3 00 2 00 1 00

NARCISSUS,—DISPLAY.—

No. 35. Four premiums 4 00 3 00 2 00 1 00

TULIP.—

No. 36. Four pots or pans, not to exceed 12 bulbs in each, not less than three varieties, four premiums. 4 00 3 00 2 00 1 00

APPLE.—

No. 37. Any variety, named, gratuity.

PEAR.—

No. 38. Any variety, named, gratuity.

VEGETABLE.—

HORSE RADISH,

No. 39. Three premiums 1 50 1 00 50

PARSNEP,

No. 40. (Hollow Crown), three premiums	1 50	1 00	50	
No. 41. (Student), three premiums	1 50	1 00	50	

RADISH,

No. 42. Two bunches (6 in each bunch), three premiums	1 50	1 00	50	

SALSIFY,

No. 43. Three premiums	1 50	1 00	50	

LETTUCE,

No. 44. Six heads, four premiums	2 00	1 50	1 00	50

RHUBARB,

No. 45. Same variety, three premiums	1 50	1 00	50	

DANDELION (cultivated),

No. 46. One-half peck, three premiums	1 50	1 00	50	

SPINACH,

No. 47. One-half peck, three premiums	1 50	1 00	50	

Thursday, May 10.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

PANSY,—NO DUPLICATES.—

No. 48. One stand, one stem in a vial, four premiums	$3 00	2 00	1 00	50
No. 49. Six plants in bloom, distinct in color, exhibited in pots, four premiums	3 00	2 00	1 00	50

BOUQUET,—HAND.—

No. 50. Not to exceed 9 inches in diameter, four premiums	3 00	2 00	1 00	50

HYACINTH,—OPEN CULTURE.—

No. 51. Display in vases, four premiums	3 00	2 00	1 00	50

PELARGONIUM—(FANCY AND SHOW)—IN BLOOM.—

No. 52. Four plants, of distinct varieties, four premiums	3 00	2 00	1 00	50

TULIP,—OPEN CULTURE.—

No. 53. Display, not to exceed 25 vases, four premiums	3 00	2 00	1 00	50

No. 54. Vase of blooms, all of one color, three premiums		2 00	1 00	50

CUT FLOWERS.—

No. 55. Stand, no restrictions, four premiums	3 00	2 00	1 00	50
No. 56. Basket, no restrictions, four premiums	3 00	2 00	1 00	50

AZALEA—(Mollis).—

No. 57. For the best display in vases, four premiums	3 00	2 00	1 00	50

VEGETABLE.—

Asparagus,

No. 58. Two bunches, three premiums	$1 50	1 00	50	

Dandelion,

No. 59. Cultivated, half-peck, three premiums	1 50	1 00	50	

Onion,

No. 60. Two bunches, six in each bunch, three premiums	1 50	1 00	50	

Radish,

No. 61. Three premiums	1 50	1 00	50	

Rhubarb,

No. 62. Linnæus, three premiums	1 50	1 00	50	
No. 63. Victoria, three premiums	1 50	1 00	50	

Spinach,

No. 64. Half-peck, three premiums	1 50	1 00	50	

Thursday, June 7.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 65. Stand,—no restrictions, four premiums	$3 00	2 00	1 00	50

NATIVE FLOWERS.—

No. 66. Stand,—no restrictions, four premiums	3 00	2 00	1 00	50
No. 67. One Vase,—The specimens not to be tied or wired, three premiums.		2 00	1 00	50

BEGONIA,—IN BLOOM.—

No. 68. One plant, four premiums	3 00	2 00	1 00	50

IRIS.—

No. 69. Ten vases, four premiums	3 00	2 00	1 00	50

CLEMATIS.—

No. 70. Display, in vases, two premiums			2 00	1 00

FUCHSIA,—DISTINCT VARIETIES.—

No. 71. Four plants in bloom, four premiums	3 00	2 00	1 00	50

RHODODENDRON.—

No. 72. Display, in vases, four premiums	3 00	2 00	1 00	50

AZALEA.—GHENT.—

No. 73. Display, in vases, four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 74. From hardy plants and shrubs, display not to exceed 25 vases, four premiums	3 00	2 00	1 00	50

VEGETABLE.—

ASPARAGUS,

No. 75. Two bunches, three premiums	$1 50	1 00	50	

BEET,

No. 76. Early, twelve specimens, three premiums	2 00	1 50	1 00	

CUCUMBER,

No. 77. Three specimens, three premiums	1 50	1 00	50	

SPINACH,

No. 78. Half-peck, three premiums	1 50	1 00	50	

Thursday, June 14.

HYDRANGEA,—ONE PLANT IN BLOOM.—

No. 79. Hortensis, three premiums	$2 00	1 00	50	
No. 80. Otaksa, three premiums	2 00	1 00	50	
No. 81. Thomas Hogg, three premiums	2 00	1 00	50	

BASKET.—No restrictions.

No. 82. AMATEUR,—four premiums	$3 00	2 00	1 00	50
No. 83. FLORIST,—four premiums	3 00	2 00	1 00	50

BOUQUET.—PARLOR.—

No. 84.	AMATEUR,—four premiums	$3 00	2 00	1 00	50
No. 85.	FLORIST,—four premiums	3 00	2 00	1 00	50

STRAWBERRY.—

No. 86. Any variety, gratuity.

VEGETABLE.—

PEA,

No. 87.	One half-peck, four premiums	$2 00	1 50	1 00	50

LETTUCE,

No. 88.	Six heads, three premiums		1 50	1 00	50

Thursday, June 21.

CUT FLOWERS,—IN VASES.—

No. 89.	For the best display (no duplicates), five premiums	$5 00	3 00	2 00	1 00	50

Campanula Media. (CANTERBURY BELL).

No. 90.	Display, three premiums			2 00	1 00	50

Dianthus Barbatus. (SWEET WILLIAM).

No. 91.	Stand, one truss in a vial, four premiums		3 00	2 00	1 00	50

Pœonia.

No. 92.	Twenty vases, four premiums		3 00	2 00	1 00	50

STRAWBERRY.—

No. 93.	Michaels, 24 berries, flat, three premiums			$1 50	1 00	50
No. 94.	Bubach, 24 berries, flat, three premiums			1 50	1 00	50
No. 95.	Charles Downing, 24 berries, flat, four premiums		2 00	1 50	1 00	50
No. 96.	Sharpless, 24 berries, flat, four premiums		2 00	1 50	1 00	50

No. 97. Other varieties, not scheduled, 24 berries, flat, gratuity.

VEGETABLE.—

PEA,

No. 98.	Any variety, named, one-half peck, three premiums			$2 00	1 50	1 00

Thursday, June 28.

☞ This exhibition will be open to the public from 3 P. M. until 5.30 P. M.

ROSE.—

[To be Shown in the Vases of the Society.]

No. 99.	Best twelve blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums	$4 00	3 00	2 00	1 00
No. 100.	For the best six blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums	3 00	2 00	1 00	50

N.B. Exhibitors competing in both Nos. 99 and 100 must not duplicate.

No. 101.	For the best stand of Roses, five premiums	$5 00	4 00	3 00	2 00	1 00
No. 102.	For the best basket or dish of Roses, three premiums		2 00	1 00	50
No. 103.	Moss Roses. Display in vases, gratuity.				

STRAWBERRY.—

No. 104.	Beder Wood, 24 berries, flat, three premiums	$1 50	1 00	50	
No. 105.	Belmont, 24 berries, flat, three premiums.	1 50	1 00	50	
No. 106.	Jersey Queen, 24 berries, flat, three premiums	1 50	1 00	50	
No. 107.	Jewell, 24 berries, flat, three premiums.	1 50	1 00	50	
No. 108.	Leader, 24 berries, flat, three premiums.	1 50	1 00	50	
No. 109.	Marshall, 24 berries, flat, three premiums.	1 50	1 00	50	
No. 110.	Miner, 24 berries, flat, three premiums.	1 50	1 00	50	
No. 111.	Parker Earle, 24 berries, flat, three premiums	1 50	1 00	50	
No. 112.	Other varieties, not scheduled, 24 berries, flat, gratuity.				

CHERRY.—

No. 113.	Coe's Transparent, one quart, four premiums	$2 00	1 50	1 00	50
No. 114.	Gov. Wood, one quart, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

BEET,

No. 115. Turnip rooted, 12 specimens, three premiums $1 50 1 00 50

PEA,

No. 116. McLean's Advancer, one-half peck, three premiums..... 2 00 1 50 1 00

Thursday, July 12.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ZONALE GERANIUM,—IN VASES.—

No. 117. For the best display (no duplicates), 1 truss in a vase, four premiums..... $3 00 2 00 1 00 50

No. 118. LILLIUM CANDIDUM. 12 spikes, four premiums..... 4 00 3 00 2 00 1 00

GLOXINIA,—DISTINCT.—

No. 119. Four plants in bloom, four premiums 3 00 2 00 1 00 50

No. 120. One plant in bloom, two premiums, 2 00 1 00

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 121. 24 vases, four premiums..... 3 00 2 00 1 00 50

IRIS KÆMPFERI.

No. 122. 20 vases, one spike in each, four premiums..... 3 00 2 00 1 00 50

RASPBERRY.—

No. 123. Brandywine, one quart, three premiums.. $1 50 1 00 50

No. 124. Cuthbert, one quart, three premiums.... 1 50 1 00 50

No. 125. Hansell, one quart, three premiums..... 1 50 1 00 50

No. 126. Hudson River Antwerp, one quart, three premiums..... 1 50 1 00 50

No. 127. Marlboro', one quart, three premiums... 1 50 1 00 50

No. 128. Northumberland, one quart, three premiums 1 50 1 00 50

No. 129. Turner, one quart, three premiums 1 50 1 00 50

No. 130. Other varieties, not scheduled, gratuity.

RASPBERRY.—Blackcap.—

No. 131.	Davidson, one quart, two premiums		$1 00		50
No. 132.	Doolittle, one quart, two premiums		1 00		50
No. 133.	Gregg, one quart, two premiums		1 00		50
No. 134.	Mammoth Cluster, one quart, two premiums		1 00		50
No. 135.	Souhegan, one quart, two premiums		1 00		50
No. 136.	Other varieties, not scheduled, gratuity.				

CHERRY.—

No. 137.	Black Eagle, one quart, four premiums	$2 00	1 50	1 00	50
No. 138.	Black Tartarian, one quart, four premiums	2 00	1 50	1 00	50
No. 139.	Downer's Late Red, one quart, four premiums	2 00	1 50	1 00	50
No. 140.	Elton, one quart, four premiums.	2 00	1 50	1 00	50

STRAWBERRY.—

No. 141. Any variety, 24 berries, flat, gratuity.

VEGETABLE.—

Pea,

No. 142.	Champion of England, three premiums.	$2 00	1 50	1 00	
No. 143.	Stratagem, three premiums	2 00	1 50	1 00	
No. 144.	Yorkshire Hero, three premiums	2 00	1 50	1 00	
No. 145.	Other varieties, not scheduled, gratuity.				

Cabbage,

No. 146. Three specimens, gratuity.

Potato,

No. 147.	Any named variety, 12 specimens, three premiums	$2 00	1 50	1 00	

Bean.—Snap—one-half peck.

No. 148.	Wax, three premiums	2 00	1 50	1 00	
No. 149.	Green pod, three premiums	2 00	1 50	1 00	

Thursday, July 19.

CUT FLOWERS,—Seedlings of 1894.

No. 150.	Display in vases, four premiums.	$3 00	2 00	1 00	50

BASKET,—No restrictions.

No. 151.	Amateur,—four premiums	3 00	2 00	1 00	50
No. 152.	Florist,—four premiums	3 00	2 00	1 00	50

PETUNIA,—One spray in each vial.

No. 153.	Stand, four premiums	3 00	2 00	1 00	50

CURRANT.—

No. 154.	Fay, 24 bunches, three premiums.		1 50	1 00	50
No. 155.	Red Dutch, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 156.	Versaillaise, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 157.	White Dutch, 24 bunches, three premiums		1 50	1 00	50
No. 158.	White Grape, 24 bunches, three premiums		1 50	1 00	50
No. 159.	Other varities, not scheduled, gratuity.				

RASPBERRY.—

No. 160.	Brinklé's Orange, one quart, three premiums		1 50	1 00	50
No. 161.	Hornét, 1 quart, three premiums		1 50	1 00	50
No. 162.	Any other variety, one quart, gratuity.				

VEGETABLE.—

CABBAGE,

No. 163.	Brunswick, three specimens, three premiums		1 50	1 00	50
No. 164.	Henderson, three premiums		1 50	1 00	50

SQUASH,

No. 165.	Three Summer Crookneck, two premiums,			1 00	50
No. 166.	Three Scallop, two premiums			1 00	50

TOMATO,

No. 167.	Any named variety, three premiums	2 00	1 50	1 00	

Thursday, July 26.

BOUQUET,—PARLOR.—

No. 168.	AMATEUR,—four premiums	$3 00	2 00	1 00	50
No. 169.	FLORIST,—four premiums	3 00	2 00	1 00	50

PHLOX DRUMMONDI.—

No. 170.	Stand, four premiums	3 00	2 00	1 00	50

HOLLYHOCK.—

No. 171.	Twenty blooms in vases, four premiums	3 00	2 00	1 00	50

SWEET PEA.—

No. 172.	Stand, not exceeding six stems in a vial, four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—NO RESTRICTIONS.—

No. 173.	Stand, four premiums	3 00	2 00	1 00	50

BLACKBERRY.—

No. 174.	Agawam, one quart, two premiums			1 00	50
No. 175.	Early Harvest, one quart, two premiums			1 00	50

GOOSEBERRY.—

No. 176. One quart, of any named variety, gratuity.

PEAR.—

No. 177.	D'Eté, three premiums	$1 50		1 00	50

VEGETABLE.—

BEAN—(shell),

No. 178.	Dwarf Horticultural, half-peck, three premiums	$1 50		1 00	50
No. 179.	Any other (named) variety, three premiums	1 50		1 00	50

CORN.

No. 180.	(Sweet), four premiums	2 00	1 50	1 00	50

POTATO,—12 specimens.

No. 181.	Hebron, three premiums		1 50	1 00	50
No. 182.	Polaris, three premiums		1 50	1 00	50
No. 183.	Potentate, three premiums		1 50	1 00	50
No. 184.	Rose, three premiums		1 50	1 00	50

Thursday, August 2.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 185.	Twenty blooms, clusters, sprays or spikes, in vases, three premiums	$3 00	2 00	1 00	

NATIVE FLOWERS.—

No. 186.	Stand,—no restrictions, four premiums	3 00	2 00	1 00	50

BASKET,—NO RESTRICTIONS.—

No. 187.	AMATEUR.—four premiums	3 00	2 00	1 00	50
No. 188.	FLORIST.—four premiums	3 00	2 00	1 00	50

APPLE.—

No. 189. Any variety, gratuity.

PEAR.—

No. 190. Any variety, not scheduled, gratuity.

BLACKBERRY.—

No. 191.	Minnewaska, one quart, two premiums	$1 00			50
No. 192.	Snyder, one quart, two premiums	1 00			50
No. 193.	Wachusett, one quart, two premiums	1 00			50

No. 194. Other varieties, not scheduled, gratuity.

VEGETABLE.—

CORN,

No. 195.	Crosby, three premiums	$2 00	1 50	1 00	

CUCUMBER,

No. 196.	Three specimems, two premiums		1 00		50

TOMATO,

No. 197.	Acme, three premiums	1 50	1 00		50

Thursday, August 9.

ANTIRRHINUM,—SNAP DRAGON.—

No. 198.	Stand, four premiums	$3 00	2 00	1 00	50

GERMAN STOCKS.—

No. 199.	Stand, four premiums	3 00	2 00	1 00	50

PINK.—(ALL KINDS).—

No. 200.	Stand, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 201.	Astrachan, four premiums	2 00	1 50	1 00	50
No. 202.	Sweet Bough, three premiums		1 50	1 00	50

PEAR.—

No. 203.	Giffard, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 204. Any variety, gratuity.

VEGETABLE.—

BEAN—(shell),

No. 205. Concord, half-peck, in pods, three premiums $1 50 1 00 50

TOMATO,

No. 206. Livingston's Perfection, three premiums. 1 50 1 00 50

Thursday, August 16.

CUT FLOWERS.—No restrictions.

No. 207. Stand, four premiums $3 00 2 00 1 00 50

GLADIOLUS.—(DISTINCT VARIETIES).—NAMED.

No. 208. Twenty vases, 1 spike in each, four premiums 4 00 3 00 2 00 1 00

SALPIGLOSSIS.—

No. 209. Stand, four premiums 3 00 2 00 1 00 50

APPLE.—

No. 210. Oldenburg, four premiums $2 00 1 50 1 00 50

No. 211. Any variety, not scheduled, gratuity.

APRICOT.—

No. 212. Any variety, two premiums 1 00 50

PEAR.—

No. 213. Clapp, five premiums 3 00 2 00 1 50 1 00 50

PEACH.—

No. 214. Alexander, three premiums 1 50 1 00 50

No. 215. Beatrice, three premiums 1 50 1 00 50

No. 216. Cole's Early Red, three premiums 1 50 1 00 50

No. 217. Rivers, three premiums 1 50 1 00 50

VEGETABLE.—

CORN,

No. 218. (Sweet), 12 ears, of not less than 12 rows, three premiums $1 50 1 00 50

SQUASH,

No. 219. Marrow, 3 specimens, three premiums .. 1 50 1 00 50

TOMATO,

No. 220. Beauty, three premiums 1 50 1 00 50

Thursday, August 23.

ASTER.—

No. 221.	Rose, 20 vials, 1 bloom in each, three premiums		$2 00	1 00	50
No. 222.	Comet, 20 vials, 1 bloom in each, three premiums		2 00	1 00	50
No. 223.	Victoria, 20 vials, 1 bloom in each, three premiums		2 00	1 00	50
No. 224.	Pompon, stand, one spray of not more than 6 blooms in each vial, four premiums	3 00	2 00	1 00	50
No. 225.	Truffaut, — Pæony-flowered, stand, 3 blooms in each vial, four premiums	3 00	2 00	1 00	50
No. 226.	Large vase of blooms, all of one color, three premiums		2 00	1 00	50

GLADIOLUS,—Hardy,—Lemoine's Hybrids.

No. 227.	Twenty vases, one spike in each, four premiums	3 00	2 00	1 00	50

PHLOX—PERENNIAL.—

No. 228.	Twenty vases, one head in each, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 229.	Somerset, three premiums		$1 50	1 00	50
No. 230—	Williams, four premiums	2 00	1 50	1 00	50

PEAR.—

No. 231.	Rostiezer, three premiums		1 50	1 00	50
No. 232.	Tyson, three premiums		1 50	1 00	50

PEACH.—

No. 233.	Amsden, three premiums		1 50	1 00	50

VEGETABLE.—

Bean—(half-peck in pod.)—

No. 234.	Horticultural (pole), three premiums		$1 50	1 00	50
No. 235.	Goddard, three premiums		1 50	1 00	50

Thursday, August 30.

SCABIOSA.—

No. 236.	Stand, not exceeding six flowers in a vial, four premiums	$3 00	2 00	1 00	50

ZINNIA.—

No. 237.	Stand, at least twelve varieties, one flower in a vial, four premiums	3 00	2 00	1 00	50

LILIUM SPECIOSUM.—

No. 238.	Twelve vases, four premiums	3 00	2 00	1 00	50

MARIGOLD.—

No. 239.	Stand, four premiums	3 00	2 00	1 00	50

BEGONIA—(Tuberous Rooted)—in bloom.—

No. 240.	Four plants, four premiums	3 00	2 00	1 00	50
No. 241.	Display, 25 vases, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 242. Any variety, not scheduled, gratuity.

APPLE—(Crab).—

No. 243.	Transcendent, 24 specimens, three premiums		1 50	1 00	50

NECTARINE.—

No. 244.	Any variety, two premiums			1 00	50

PEAR.—

No. 245.	Assomption, three premiums		1 50	1 00	50
No. 246.	Petite Marguerite, three premiums		1 50	1 00	50

PEACH.—

No. 247.	Cooledge, three premiums		1 50	1 00	50
No. 248.	Foster, three premiums		1 50	1 00	50
No. 249.	George IV., three premiums		1 50	1 00	50
No. 250.	Richmond, three premiums		1 50	1 00	50

PLUM.—

No. 251.	Bradshaw, three premiums		1 50	1 00	50
No. 252.	McLaughlin, three premiums		1 50	1 00	50
No. 253.	Washington, three premiums		1 50	1 00	50

VEGETABLE.—

Lima Bean,

No. 254.	Large, half-peck, three premiums	$1 50		1 00	50

CAULIFLOWER,

No. 255.	Three specimens, three premiums....	2 00	1 50	1 00

TOMATO,

No. 256.	Any variety, not scheduled, three premiums	1 50	1 00	50

SQUASH—(TURBAN).—

No. 257.	Three specimens, three premiums....	1 50	1 00	50

Thursday, September 6.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals and act upon business properly submitted.*

CUT FLOWERS.—

No. 258.	Stand,—no restrictions, four premiums	$3 00	2 00	1 00	50

BOUQUET—(PARLOR).—

No. 259.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 260.	FLORIST,—four premiums.....	3 00	2 00	1 00	50

DAHLIA.—

LARGE FLOWERED,

No. 261.	Twenty vases, one flower in each, four premiums	3 00	2 00	1 00	50

POMPON.

No. 262.	Twenty vases, one spray in each, four premiums.....	3 00	2 00	1 00	50

NASTURTIUM AND TROPÆOLUM.—

No. 263.	Stand, not more than six blooms in each bottle, four premiums ..	3 00	2 00	1 00	50

CLEMATIS.—

No. 264.	Display, in vases, two premiums.			2 00	1 00

VERBENA.—

No. 265.	Stand, four premiums.....	3 00	2 00	1 00	50

APPLE.—

No. 266.	Golden Sweet, three premiums.....	$1 50	1 00	50	
No. 267.	Worcester Spy, three premiums.....	1 50	1 00	50	
No. 268.	Yellow Transparent, three premiums.. .	1 50	1 00	50	
No. 269.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 270.	Ansault, three premiums	1 50	1 00	50
No. 271.	Earle's Bergamot, three premiums	1 50	1 00	50
No. 272.	St. Ghislain, three premiums	1 50	1 00	50

PEACH.—

No. 273.	Crawford (Early), three premiums	1 50	1 00	50

PLUM.—

No. 274.	Gen. Hand, three premiums	1 50	1 00	50
No. 275.	Imperial Gage, three premiums	1 50	1 00	50
No. 276.	Victoria, three premiums	1 50	1 00	50

VEGETABLE.—

CUCUMBER—for pickles,

No. 277.	Half-peck, three premiums	$1 50	1 00	50

CORN,

No. 278.	(Sweet), 12 ears, of not less than 12 rows, three premiums	1 50	1 00	50

PEPPER,—12 specimens.

No. 279.	Large Bell, two premiums		1 00	50
No. 280.	Mammoth, two premiums		1 00	50
No. 281.	Squash, two premiums		1 00	50

Thursday, September 13.

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 282.	Twenty vases, four premiums	$3 00	2 00	1 00	50

GERANIUM,—Display, no duplicates, one truss in a vase.

No. 283.	Four premiums	3 00	2 00	1 00	50

PANSY,—WITH FOLIAGE.—

No. 284.	Stand, one stem in each vial, four premiums	3 00	2 00	1 00	50

DAHLIA,—SINGLE.—

No. 285.	Twenty vases, one spray in each, three premiums		1 50	1 00	50

GLADIOLUS,—Display in vases, no duplicates.

No. 286.	Four premiums	3 00	2 00	1 00	50

APPLE.—

No. 287.	Foundling, three premiums		$1 50	1 00	50
No. 288.	Garden Royal, three premiums		1 50	1 00	50
No. 289.	Holden, three premiums		1 50	1 00	50

PEAR.—

No. 290.	Bartlett, five premiums	3 00	2 00	1 50	1 00	50
No. 291.	Lucrative, three premiums			1 50	1 00	50
No. 292.	Pratt, three premiums			1 50	1 00	50

PLUM.—

No. 293.	Fellenberg, three premiums		1 50	1 00	50
No. 294.	Jefferson, three premiums		1 50	1 00	50
No. 295.	Lombard, three premiums		1 50	1 00	50
No. 296.	Monroe, three premiums		1 50	1 00	50
No. 297.	Quackenboss, three premiums		1 50	1 00	50

PEACH.—

No. 298.	Oldmixon, three premiums		1 50	1 00	50

GRAPE.—

No. 299.	Green Mountain, three clusters, three premiums		1 50	1 00	50
No. 300.	Moore, three clusters, three premiums		1 50	1 00	50

MELON.—

No. 301.	Green Flesh, three specimens, two premiums			1 00	50
No. 302.	Yellow Flesh, three specimens, two premiums			1 00	50
	WATER,				
No. 303.	Two specimens, two premiums			1 00	50

VEGETABLE.—

	CABBAGE,				
No. 304.	Brunswick, three specimens, three premiums		$1 50	1 00	50
	CELERY,				
No. 305.	Six specimens, any variety, named, three premiums		2 00	1 00	50

Thursday, September 20.

ASTER.—

No. 306.	Vases, not to exceed forty, four premiums	$3 00	2 00	1 00	50

CUT FLOWERS—(BASKET.)—No restrictions.

No. 307.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 308.	FLORIST,—four premiums	3 00	2 00	1 00	50

CUT FLOWERS—(STAND.)—No restrictions.

No. 309.	Four premiums	3 00	2 00	1 00	50

APPLE.—

No. 310.	Gravenstein, five premiums,	$3 00	2 00	1 50	1 00	50
No. 311.	Maiden's Blush, three premiums		1 50	1 00	50
No. 312.	Porter, three premiums		1 50	1 00	50

APPLE,—CRAB.

No. 313.	Hyslop, twenty-four, two premiums			1 00	50

PEAR.—

No. 314.	Durandeau, three premiums		1 50	1 00	50
No. 315.	Paradis d'Automne, three premiums		1 50	1 00	50
No. 316.	Other varieties, not scheduled, gratuity.				

PEACH.—

No. 317.	Crawford (late), three premiums		1 50	1 00	50
No. 318.	New seedling, originated in Worcester County, four premiums	2 00	1 50	1 00	50
No. 319.	Stump the World, three premiums		1 50	1 00	50
No. 320.	Other varieties, not scheduled, gratuity.				

PLUM.—

No. 321.	Coe's Golden Drop, three premiums		1 50	1 00	50
No. 322.	Moore's Arctic, three premiums		1 50	1 00	50
No. 323.	Pond's Seedling, three premiums		1 50	1 00	50
No. 324.	Reine Claude de Bavay, three premiums		1 50	1 00	50

GRAPE.—

No. 325.	Brighton, three clusters, three premiums		1 50	1 00	50
No. 326.	Lady, three clusters, three premiums		1 50	1 00	50
No. 327.	Lindley, three premiums		1 50	1 00	50
No. 328.	Massasoit, three clusters, three premiums		1 50	1 00	50
No. 329.	Worden, three clusters, three premiums		1 50	1 00	50

VEGETABLE.—

CARROT,

No. 330.	Any variety, three premiums	$1 50	1 00	50

EGG PLANT,

No. 331.	Three specimens, three premiums		2 00	1 00	50

CABBAGE,

No. 332.	Red, three specimens, three premiums		1 50	1 00	50
No. 333.	Savoy, three specimens, three premiums		1 50	1 00	50

CAULIFLOWER,

No. 334.	Three specimens, four premiums	2 00	1 50	1 00	50

Thursday, September 27.

CUT FLOWERS—(BASKET.)—No restrictions.

No. 335.	AMATEUR,—four premiums	$3 00	2 00	1 00	50
No. 336.	FLORIST,—four premiums	3 00	2 00	1 00	50

CUT FLOWERS—(STAND.)—No restrictions.

No. 337.	Four premiums	3 00	2 00	1 00	50

APPLE.—

No. 338.	American Beauty, three premiums		$1 50	1 00	50
No. 339.	Lyscom, three premiums		1 50	1 00	50
No. 340.	McLellan, three premiums		1 50	1 00	50
No. 341.	Mother, three premiums		1 50	1 00	50
No. 342.	Twenty-Ounce, three premiums		1 50	1 00	50

PEAR.—

No. 343.	Buffum, two premiums			1 00	50
No. 344.	Hardy, three premiums		1 50	1 00	50
No. 345.	Louise Bonne de Jersey, five premiums	3 00	2 00	1 50	1 00	50
No. 346.	Seckel, five premiums	3 00	2 00	1 50	1 00	50
No. 347.	Superfin, three premiums		1 50	1 00	50
No. 348.	Urbaniste, three premiums		1 50	1 00	50
No. 349.	Washington, three premiums		1 50	1 00	50

PEACH.—

No. 350. Any variety, gratuity.

GRAPE.—

No. 351.	Barry, three clusters, three premiums		1 50	1 00	50
No. 352.	Concord, four premiums	2 00	1 50	1 00	50
No. 353.	Delaware, four premiums	2 00	1 50	1 00	50
No. 354.	Duchess, three premiums		1 50	1 00	50
No. 355.	Iona, three premiums		1 50	1 00	50
No. 356.	Merrimac, three premiums		1 50	1 00	50
No. 357.	Niagara, three premiums		1 50	1 00	50
No. 358.	Pocklington, three premiums		1 50	1 00	50
No. 359.	Salem, three premiums		1 50	1 00	50
No. 360.	Wilder, three premiums		1 50	1 00	50

No. 361. Any variety, not scheduled, gratuity.

VEGETABLE.—

No. 362.	Collection, not exceeding fifty varieties, four premiums	$8 00	6 00	4 00	2 00

Thursday, October 4.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals and act upon business properly submitted.*

CUT FLOWERS.—

No. 363.	Hand Bouquet, not to exceed nine in. in diameter, four premiums..	$3 00	2 00	1 00	50
No. 364.	Stand, no restrictions, four premiums.....	3 00	2 00	1 00	50

APPLE.—

No. 365.	Coggswell, three premiums.....		1 50	1 00	50
No. 366.	Fameuse, three premiums.....		1 50	1 00	50
No. 367.	Hubbardston, four premiums.....	2 00	1 50	1 00	50
No. 368.	Washington Strawberry, two premiums.			1 00	50
No. 369.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 370.	Bosc, five premiums.....	$3 00	2 00	1 50	1 00	50
No. 371.	Dr. Reeder, three premiums.			1 50	1 00	50
No. 372.	Sheldon, five premiums....	3 00	2 00	1 50	1 00	50
No. 373.	Other varieties, not scheduled, gratuity.					

GRAPE,—open culture.—

No. 374. Any variety, three clusters, gratuity.

QUINCE.—

No. 375.	Champion, four premiums.....	$2 00	1 50	1 00	50	
No. 376.	Orange, five premiums....	3 00	2 00	1 50	1 00	50
No. 377.	Other varieties, gratuity.					

VEGETABLE.—

Potato,

No. 378.	Six varieties (named), 12 specimens of each, four premiums.	$3 00	2 00	1 50	1 00

Squash,

Three specimens.

No. 379.	Essex-Hybrid, three premiums.....	$1 50	1 00	50	
No. 380.	Marblehead, three premiums.....	1 50	1 00	50	
No. 381.	Any variety, not scheduled, three premiums	1 50	1 00	50	

Celery,—Six specimens,

No. 382.	Paris Golden, three premiums.....	2 00	1 50	1 00
No. 383.	White Plume, three premiums.....	2 00	1 50	1 00

Thursday, October 11.

CUT FLOWERS—(BASKET).—No restrictions.

No. 384.	Four premiums	$3 00	2 00	1 00	50

APPLE.—

No. 385.	Belleflower, three premiums		$1 50	1 00	50
No. 386.	Leicester Sweet, three premiums		1 50	1 00	50
No. 387.	Sutton Beauty, three premiums		1 50	1 00	50
No. 388.	Tompkins King, four premiums	2 00	1 50	1 00	50
No. 389.	Wealthy, three premiums		$1 50	1 00	50
No. 390.	Other varieties, named, not scheduled, gratuity.				

PEAR.—

No. 391.	Dix, two premiums			1 00	50
No. 392.	Frederick Clapp, three premiums		1 50	1 00	50
No. 393.	Marie Louise, three premiums		1 50	1 00	50
No. 394.	Onondaga, three premiums		1 50	1 00	50

GRAPE.—

No. 395.	Diana, three clusters, three premiums		1 50	1 00	50

VEGETABLE.—

ONION,

No. 396.	Red Globe—Half-peck, three premiums.		1 50	1 00	50
No. 397.	Yellow Danvers—Half-peck, three premiums		1 50	1 00	50

SALSIFY,

No. 398.	Three premiums		1 50	1 00	50

ENDIVE,

No. 399.	Six heads, three premiums		1 50	1 00	50

SQUASH,

No. 400.	Hubbard, three specimens, three premiums		1 50	1 00	50

Thursday, October 18.

CUT FLOWERS.—

No. 401. In any form, a gratuity.

APPLE.—

No. 402.	Peck, three premiums		$1 50	1 00	50
No. 403.	Pound Sweet, three premiums		1 50	1 00	50
No. 404.	R. I. Greening, five premiums	3 00	2 00	1 50	1 00	50
No. 405.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 406.	Anjou, five premiums	3 00	2 00	1 50	1 00	50
No. 407.	Comice, five premiums	3 00	2 00	1 50	1 00	50

VEGETABLE.—

SQUASH,

No. 408.	Bay State, three specimens, three premiums		$1 50	1 00	50

No. 409.	Butman, three specimens, three premiums		1 50	1 00	50

BRUSSELS SPROUTS.—

No. 410.	Half-peck, three premiums		1 50	1 00	50

POTATO.—

No. 411.	Seedling originated in Worcester County, grown by the exhibitor, and exhibited three years in succession, three premiums		10 00	8 00	6 00

Thursday, October 25.

POT PLANTS,—IN BLOOM.—

No. 412.	Gratuity.				

APPLE.—

No. 413.	Baldwin, six premiums	$4 00 3 00 2 00	1 50	1 00	50
No. 414.	Canada Red (Old Nonesuch), three premiums		1 50	1 00	50
No. 415.	Golden Russet, three premiums		1 50	1 00	50
No. 416.	Golden Russet, sweet, two premiums			1 00	50
No. 417.	Golden Russet of Mass., three premiums		1 50	1 00	50
No. 418.	Ladies' Sweet, two premiums			1 00	50
No. 419.	Lemon Greening, two premiums			1 00	50
No. 420.	McIntosh, two premiums			1 00	50
No. 421.	Northern Spy, five premiums	3 00 2 00	1 00	1 50	
No. 422.	Palmer, three premiums		1 50	1 00	50
No. 423.	Red Russet, three premiums		1 50	1 00	50
No. 424.	Roxbury Russet, four premiums	2 00	1 50	1 00	50
No. 425.	Collection, not to exceed ten varieties, four premiums	5 00 3 00	2 00	1 00	

PEAR.—

No. 426.	Angoulême, four premiums	2 00	1 50	1 00	50
No. 427.	Clairgeau, three premiums		1 50	1 00	50
No. 428.	Dana's Hovey, four premiums	2 00	1 50	1 00	50
No. 429.	Josephine de Malines, three premiums		1 50	1 00	50
No. 430.	Langelier, three premiums		1 50	1 00	50
No. 431.	Lawrence, five premiums	3 00 2 00	1 50	1 00	50
No. 432.	Mount Vernon, two premiums			1 00	50
No. 433.	Winter Nelis, three premiums		1 50	1 00	50

VEGETABLE.—

CELERY,—Six specimens.

No. 434.	Boston Market, four premiums	3 00	2 00	1 00	50
No. 435.	Giant Pascal, four premiums	3 00	2 00	1 00	50
No. 436.	Any variety, not scheduled, four premiums	3 00	2 00	1 00	50

TURNIP,

No. 437.	White Egg, three premiums		1 50	1 00	50
No. 438.	Purple Top, strap leaf, three premiums		1 50	1 00	50

CHRYSANTHEMUM.

ELEVENTH SPECIAL EXHIBITION

ON

Tuesday, November 13th,

Wednesday, November 14th,

AND

Thursday, November 15th, 1894.

[N. B. All the specimens placed in competition must be from the best types, and owned and grown by the competitor three months.]

No. 1. For the best twelve large-flowered, in pots,—distinct named varieties, four premiums.....
$20 00 15 00 10 00 5 00

No. 2. For the best six large-flowered, in pots, distinct named varieties, four premiums.....
$10 00 6 00 4 00 2 00

No. 3. For the best three plants, in pots, from Amateurs,—distinct (named), four premiums.....
$5 00 3 00 2 00 1 00

No. 4. For the best display in pots, any variety, five premiums .. ..
$15 00 10 00 5 00 3 00 2 00

No. 5. For Specimen Plant, of any variety, four premiums.
$5 00 3 00 2 00 1 00

No. 6. Best six plants, in pots, grown to single blooms, four premiums..... ..
$4 00 3 00 2 00 1 00

No. 7. For twelve Cut Blooms, distinct named, with long stems and foliage, in vases, four premiums.. ..
$6 00 4 00 3 00 2 00

No. 8. For six Cut Blooms, distinct named, with long stems and foliage, in vases, three premiums .....
$3 00 2 00 1 00

N.B. Exhibitors competing in both Nos. 7 and 8 must not duplicate.

No. 9. For twenty-four sprays, named, not less than twelve varieties, in vases, four premiums .. ...
$5 00 4 00 3 00 2 00

No. 10. For one Cut Bloom, named, with long stem and foliage, three premiums .....
$3 00 2 00 1 00

No. 11. For Vase, of not to exceed ten blooms, of one variety, four premiums..... .....
$4 00 3 00 2 00 1 00

No. 12. For Vase, of not to exceed ten blooms, mixed varieties, four premiums . .....
$4 00 3 00 2 00 1 00

Gratuities may be awarded for meritorious exhibits.

No. 13. Fern, one plant, gratuity.

No. 14. Palm, one plant, gratuity.

No. 15. Decorative and Ornamental Plants, gratuity.

☞ This Exhibition will be open to the public from 2 P. M. until 9 P. M., Tuesday, and from 9 A. M. until 9 P. M., Wednesday and Thursday.

ADMISSION 15 CENTS.

N. B. Exhibitors are requested to make their entries the week previous. All articles intended for this Special Exhibition, must be in the Hall, and ready for inspection by the Judge by 12 o'clock M., precisely, of the first day of the Exhibition.

By authority of the

COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS.

Attest:

EDWARD WINSLOW LINCOLN,
Secretary.

OFFICERS AND COMMITTEES
OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1893-94.

PRESIDENT:

HENRY L. PARKER, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; O. B. HADWEN, of Worcester.

SECRETARY:

EDWARD WINSLOW LINCOLN, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward L. Davis,	Worcester.
James F. Allen,	Worcester.	Henry Reed,	"
Henry Woodward,	"	Henry Phelps,	"
William T. Merrifield,	"	James Draper,	"
William H. Earle,	"	F. M. Marble,	"
H. M. Quinby,	"	Luther R. Eames,	"
Frank J. Kinney,	"	Calvin L. Hartshorn,	"
Alden Rice,	"	Joseph Lovell,	Medfield.
John D. Lovell,	"	Frederic G. Stiles,	Worcester.
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	S. H. Record,	"
William Eames,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	John L. Peters,	"
Joseph Brierly,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward,	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"		

STANDING COMMITTEES.

ON FINANCE:

Edward W. Lincoln, 1894. Nathaniel Paine, 1895. George E. Francis, 1896.

ON LIBRARY AND PUBLICATION:

Edward W. Lincoln, Adin A. Hixon, George E. Francis.

ON NOMENCLATURE:

James F. Allen, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, F. M. Marble, Charles Greenwood, Edward W. Lincoln.

ON ARRANGEMENTS AND EXHIBITIONS:

James Draper, *Chairman.*

Calvin L. Hartshorn, Hermann F. A. Lange, O. B. Hadwen, Adin A. Hixon, Charles Greenwood, F. M. Marble, O. B. Wyman, Charles E. Parker, F. A. Blake, H. B. Watts, J. L. Peters, George C. Rice, Edward Hall, William H. Johnson, with *President* Parker, and *Secretary* Lincoln.

AUDITORS.

Henry L. Parker, Fred. H. Chamberlain.

JUDGES,

ON FLOWERS, PLANTS, ETC.:
William H. Johnson.

ON FRUITS, ETC.:
James Draper.

ON VEGETABLES, ETC.:
Charles Greenwood.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

A. D. 1895-96.

Worcester, Mass.
CHARLES HAMILTON, PRINTER.
311 MAIN STREET.
1896.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY,
A. D. 1895.

ANNUAL REPORT OF THE SECRETARY.

To the Members
of the
WORCESTER COUNTY HORTICULTURAL SOCIETY:

For long years have the Members of this Society seen the name of James Frank Allen enrolled upon its list of Trustees and placed at the head of its Committee on Nomenclature. Yet to how few were his features familiar, or even a memory of his life-long service to our local Horticulture kindly treasured! Confined to his home by physical infirmity for many years, he was deprived of that personal association which had been one of his most cherished enjoyments. But there are some, few enough as it sadly happens, who recall the assiduous devotion that he brought to the definition of variety or species; a task always sufficiently exacting, and one wherein no man may hope to excel who is not inspired with a hearty enthusiasm for science and its precise terminology. In those days we were less fortunate than now in the possession of expert judges, upon whose accuracy of decision we are wont to place such implicit trust. If we could secure a Chairman for our Committees who would assume the burden of writing their Reports, as was then the custom, we were apt to flatter ourselves that we had fulfilled the whole duty of the Horticultural man. But a perfunctory discharge of obligations devolving upon him did not content our

late associate. Facile acquiescence in name or kind would never suffice him, who insisted upon positive determination of class and title in all that was brought before him. He may have been somewhat set in his own opinions; but few men are worth much, whether for themselves or others, who are certain of nothing. It may be said of Mr. Allen that he based his opinions, when challenged, upon the most approved authority, and that the occasions were rare indeed that he did not find ample support in the pages of Downing or Thomas. He grew to be an authority in our local pomology; and now that he has gone, it is fitting that this slight tribute to the unwearied service that he rendered so cheerfully, at our every beck and call, should be awarded by one who was in a position to measure its character and extent. His length of days was protracted far beyond the limits of the psalmist; and therein, as in the case of so many of our prominent associates, if longevity be of itself desirable, Horticulture may be claimed to have been vindicated in its servants.

By the death of JOHN J. THOMAS, February 22, A. D. 1895, the number of Honorary Members of this Society is reduced to four. It has ever been a wise practice, in our government, to be strictly guarded in the bestowal of official recognition, and to make no award of substance or honor that could not be amply justified by the manifest merit of its recipient. Whether as a practical pomologist, or as author of text-books that have passed through countless editions as standard authority in Horticultural science, Mr. Thomas was ever the peer of Barry and the Downings, and survived them to take his proper place, unchallenged, at the very head of the Pomologists of America. He valued his connection with this Society as an honor; in his unaffected modesty regarding all as his equals whom congenial tastes united in a common pursuit. It was the privilege of your *Secretary* to hold constant correspondence with Mr. Thomas, and it is but simple justice to acknowledge the patient courtesy with which all letters of inquiry were invariably considered and answered. Judge therefore of the shock when, in reply to a question what was the actual estimate of a

certain variety of pear by Mr. Thomas, his wife informed me that my venerable friend "was not permitted to read, write, nor even to have any one read to him." This, upon Dec. 30, A. D. 1893. For two months transcending a year his existence was prolonged under such grievous disability. It is understood that he had been able, in his latest years, to prepare a new Edition of his elaborate work upon Fruits and their Culture. His life was profitably and well spent in that learning and practice whereof he had such thorough mastery. Let us be grateful that our Society is permitted some legitimate share in his name and fame!

A brief correspondence between the Department of Agriculture at Washington, and your *Secretary* was held while the century was growing old, to which I would not now revert were it not in the public interest to show to "what base use" the gratuitous distribution of seed, conflicting with the legitimate traffic of honest, self-supporting dealers, "may come at last." The whole system cannot but be partial and, if only for that reason, must be wrong, root and branch. In theory it corrupts the moral sense and, when degraded to its usual practice, is destructive of straightforward integrity. The Representative, say from the Fall River District, who commences his career peddling "zig-zag corn," likelier than not will seek to "make his" second "calling and election sure" by a modification of the excise upon *spiritus frumenti!* at the demand of men who get a precarious living off "Cattle-Feeding" in Wall street. The notification, which came to hand by way of a New Year's present, as it were, was to the following purport:—

"UNITED STATES DEPARTMENT OF AGRICULTURE,
"WASHINGTON, D. C., 189.

"*To Edward Winslow Lincoln, Esq., Secy. of Wor. Co. Horticultural Society.*

"*Sir:* By request a package of seed is mailed to you to-day, but may not reach you within several days. The Department wishes to know of its receipt, and asks acknowledgment on postal card.

"Respectfully,

"J. STERLING MORTON,
"*Secretary.*"

You will observe that this letter of advice bore no date, doubtless owing to undue haste in transmitting intelligence of such moment; but the postmark defined plainly enough the close of the year. The answer, stating receipt, &c., is appended:

4 : January, 189 .

Hon. J. Sterling Morton, Secretary Dept. of Agriculture.

Sir: I have the honor, in behalf of this Society, to acknowledge the receipt, this day, of seeds, as follows:

One-Half Ounce (½) CABBAGE—Excelsior—Flat Dutch,
" " " (½) CARROT—Short-Horn—Early Scarlet,
" " " (½) CUCUMBER—Extra Early Siberian,
" " " (½) BEET—Early Flat Bassano,
" " " (½) LETTUCE—Golden Ball,
" " " (½) PARSNEP—Hollow-Crown,

Also,

One (1) Gill SWEET CORN—*Zigzag Evergreen.*
" (1) " " PEAS—Blue Peter.

A postal card had been duly received, doubtless intended to prepare us for the benefaction, the magnitude of which is properly appreciated. Pretty much everything in the list has been known for years to our skilful growers of vegetables, who are glad to learn that the Department of Agriculture recognizes their established merits. Of "zig-zag corn" I cannot speak so favorably; the Horticulturists of Worcester County, as a rule, preferring to take theirs straight.

With great respect I have the honor to subscribe myself,

EDWARD WINSLOW LINCOLN,
Secretary.

Since then the months have rolled by, in regular sequence, but no more corn, zig-zag or rectilinear, has been dispensed in homœopathic measure to the Horticulturists of Worcester County. Your *Secretary* was ever dull at the higher algebra. Otherwise he would gladly compute the exact benefit to this great county, having few superiors in the entire Republic, of a gill of seed—the cull and lavish bounty of the Federal Government! Nay,—he would not fear to essay the problem, illumined by the miraculous draught of Scriptural pouts, of how far the ratio of 16 to 1 might be modified, were six (6) ounces of cabbage or carrot seed annually distributed among the market gardeners of this city and vicinity! The columns of the contemporary press,

in late Spring, recorded the bestowal, through our congressmen, of Flower and Field Seeds, by the "sack full," upon local farmers. It speaks well for the fair repute of our members as Florists, Pomologists, or market gardeners, that no such rubbish has been dumped upon their premises, or left to waste as offal for city pigs. Dealers in clean, healthy seed have a right to be guarded from competition that is reckless of consequences and heedless of cost, because backed, itself, by the public treasury! That a great light shall at last become visible in Washington is matter for general rejoicing. When the General Government can confine its functions within their proper sphere of exercise it will be better for all of us who avoid the local almshouse and do not hanker for national dole. The member of this Society who consents to be a recipient of Federal bounty, to the exclusion of his fellows, perpetrates a public wrong and underlies individual reproach. Howsoever brought about, let us be exceedingly glad that this glaring shame is at last to be covered from our gaze! The conclusion of *Secretary* Morton, sustained as he is by a formal opinion of the Attorney General, that it is no part of the legitimate business of the Department of Agriculture to distribute seeds any more than their product, is generally commended by the press that takes special cognizance of seed-time and harvest. A spiteful kick is threatened from a Congressional District in our own Commonwealth, although curious stories are in circulation about those Representative heels and the force of their repulsion. It is not to be denied, if *Panem et Circenses* are to be distributed throughout the Republic, that a very acceptable form of dole in every kitchen might be found in stove polish. Yet the stove itself is but a present convenience, which gas or electricity are likely soon to supplant. Will it not be better for each tub to stand on its own bottom? Each pot to be content with its own hue without blackguarding the kettle? Each granger to earn a living, like his fathers before him, by hoeing his own row!

The display of our Native Flowers, throughout the season just past, has been a most gratifying and marked feature of our Weekly Exhibitions. In this connection

it is an act of simple justice to award the meed of praise that is plainly due to Mr. Arba Pierce, whose rare taste and tireless industry have placed this Society and the whole community under a weight of obligation for an entire generation past. No obstacle has proved insurmountable in his persistent efforts to collect specimens of almost our entire local flora in their season. The ambitious women who aim to describe "Some New England Flowers," signalizing their learning and taste by omission of Lythrum Salicaria, Sabbatia Chloroides, etc., can set no stint for Mr. Pierce. Perchance the water in the swamps wherein he wades is too deep, swamps in which the bicycle finds no pathway,—the bloomer no bottom. To him, at least, fortunately for the repute of our Society, the Flora of New England can never be complete so long as its fairest specimens are left to bloom unseen. There have been—and they might be found among our judges, to whom the Wild-Flower is but a weed, to be left in the fields, unnoticed. Yet, whence do you derive the brilliance and profusion of floriage that is so charming in Conservatory or Green-House! What was their origin? From what source do you trace their evolution? In the light of past experience, shall we call or consider anything despicable, simply because we have been too conceited or lazy to attempt its improvement?

Few, even of our oldest members, can recall our exhibitions, of a generation since, so clearly as to take precise measure of the contrast between them and those which we are latterly holding. It was always our aim to stimulate the higher culture, and to promote the practice of Horticulture by offering substantial rewards for preeminence in the actual growth of every fruit of the soil. Grant that the attendance was seldom commensurate with the merit of the display! The Exhibition was a free-will offering; the whole community might be onlookers, did they choose; and, at any rate, the tables were set as of old, when it became the fashion, if not an imperative necessity, to scour the highways, compelling the very hoodlum and tramp to come in. Now, the display of Flowers, wild or cultivated, forced, or left to grow at their

own sweet will, is so complete, that the judgment of most expert Florists must be invoked that a just award shall settle the relative merits of the various exhibits. The advance towards a thoroughly eclectic exhibition has been steadily onward, without evident check or hindrance. The former unit of superiority is adopted for a present standard of common excellence. The greater or less throngs that crowd our side benches in eager expectation of the bounty that they have got to anticipate,—almost to exact,—from the cultivators of choice specimens of rare varieties are privileged to gaze upon a banquet that never fails. But how little thought do they bestow upon the skill and industry that were required to insure the sequence of bud or blossom! How little do they reck of the cost of it all; of the sleepless vigilance and unending toil; of the watch against excess of heat or the stealthy onset of frost; from any or all of which imminent perils no one can feel sure of exemption; yet escaping which, they are accounted mean unless they make lavish distribution after gratuitous display. Might not guests at our Exhibitions well go down into their pockets before soliciting, as a free gift, flower, or fruit, that have cost so much time and labor?

But dismissing consideration of that mental perversity that would gather where it had not strewn, and which is shameless in its persistent effort to transform a generous display into a custom of promiscuous dole, we are warranted in priding ourselves upon the signal progress which has crowned the aims and efforts of the Society throughout its felicitous existence, but more especially during the past decade. The Rose was always with us; as fragrant in the simple gardens of our mothers as now on those pretentious occasions when the collections of plutocrats become almost oppressive from their sheer magnitude and heavy perfume. Yet, how lately have we acquired all that opulence of floriage which the Orient has yielded for our admiration and delight since first the squadron of Perry cast anchor in the waters of Japan! The pages of an Encyclopædia would be required to do justice to the vast number and rare excellence of plant and shrub that have come to us so easily that we almost seem to have possessed them ever. Forsythia and Weigela, Iris or Lily,

in their manifold forms; Pyrus Malus Parkmanni and Syringa Japonica; how little could our Founders anticipate the floral treasures that should so soon be spread out before them as they gaze in almost speaking likeness from yonder walls! And if in number and variety the gain is so distinct, what may we not likewise claim as to the marked advance of our members in skill and taste of arrangement! Our early equipment has become obsolete; only suitable and serviceable for such jam and litter of Marigold and Zinnia as are heaped together by Societies whose chief care is the accumulation of shekels. We too might display the monkey and parrot! and possibly by so doing earn the bounty of the commonwealth. Yet we have elected, hitherto, to "Advance the Science and promote the Practice of Horticulture;" and, as we measure our past service, wherefrom, because of local rivalry, shall we find occasion or cause to abate jot or tittle from our lofty aspiration? Understand me thoroughly, Horticulturists! as the sciolists of the daily press do not or cannot, either purposely or from deficiency of mental pollen. A hearty laugh is good in its way; and there are proper times when it may be elicited from a double somersault or grotesque buffoonery. Those of us who, aforetime, had a ninepence given us to spend at Cattle Show cannot well take exceptions to the antics and capers which draw plaudits and gate-money in these latter days. But they are not Horticulture! nor Agriculture, it is to be hoped. And, as rivals of the circus, can it be pretended for a moment that such "attractions" are to be classed with the orderly trained display of Bailey or the Ringlings! Still Horticulturists are taxed, in common with other citizens, to raise the bounty which the General Court is fooled to believe goes to advance the better cultivation of our farms! If that is to be the quality of tuition who can wonder that farms are abandoned?

Few can have attended our later Exhibitions,—during the current year especially, but must have observed the decided improvement in the character of flowers, and as well in the grace of their arrangement. A pretty feature, peculiar to our most recent schedule, has been an encouragement of the display, loosely, of the more conspicuous varieties. Thus, for example,

what could look better than Pinks or Roses thrown together in vases without being tied in bunches of customary formal stiffness! It would appear a happy conceit to designate some certain species, or variety, of flowering plant as a *piéce de resistance* for a given day; the whole to be supplemented by what, for lack of a better term, might well be styled floral display. Rose, Iris, Sweet Pea, Hollyhock, Antirrhinum, Gladiolus, Aster, Lilium Speciosum—can you not, from that almost unlimited catalogue of fragrance and beauty select each week such as shall uphold the standard of Floriculture, leaving it discretionary with the judge to recognize signal merit over and beyond the specialty? There are species, perhaps simple varieties, which constitute the main army, so to speak; and there are others, if not so meritorious, yet of such distinctive character as to justify their enrolment among the skirmishers. Wide opportunity for the display of taste in due arrangement; for the apposition of flowers with especial regard to harmony of tints without too violent contrast; is thereby afforded the individual left to his own judgment free from arbitrary restrictions. Such pretty devices as some which charmed the spectator on August 15, for example, cannot soon, nor easily, be forgotten. The entire conception, even if the ideal is imperfectly carried out, is yet a positive step forward, insomuch as it illustrates concrete beauty of the flower itself rather than color whose very brilliance is blurred by its mass. And that mass, not being desirable intrinsically, should not become an object of our bounty.

Throughout our series of Exhibitions, in that era of delirium wherein horticultural ambition aimed to see how large a collection might be accumulated, rather than what should be its quality, we were wont to fill Mechanics and Washburn Halls to overflowing. The gross, unnatural heap of this, that, and the other, blurred the vision and confused the judgment. Living longer, we became wiser. But that which we long since outgrew and therefore discarded, seems to be adopted by our gentle friends—the enemy—over on Agricultural Street, who assimilate their prey in bulk, after it has been crushed in the folds of their

annual constriction. All the dollars that can be gathered in, as the result of exhibitions chiefly remarkable for hugeness, can never compensate for the absence of that specific instruction that is rendered wholly impossible by the crowd and crush. It was a horticulturist, was it not, who wished to know what it should profit a man in the end to gain the whole world, yet lose his own soul! It was a pillar of the Church, was it not, who came to the conclusion, after sad experience, that he could not at the same time serve God and take in gate-money! You can grow flowers or fruit; and, if so inclined, may find a market for either. But Horticulture finds its truest exponent in the man who prizes beauty and fragrance for their intrinsic excellence; qualities that make the world fairer and better, and whose perennial loveliness and perfume would continue to charm even if they did not fetch a dollar at wholesale. This Society was not founded to sell fruit, but rather to eat it; and therefore to ensure that it shall be fit to eat. We learned long ago that we could go further than Capiaumont or Clairgeau, and fare no worse! Besides, living some centuries after Shakespeare, we have found abundant reason to differ from his somewhat careless dictum that the Queen of Flowers, if dubbed *Symplocarpus fœtidus*, would smell to my lady's taste. Our practice, like our charter, should ever indicate progress. Now and then we may blunder, following blind guides. Now and again we may go astray, attracted by the lure held out by Mammon, and neglecting the strait and narrow paths wherein Flora and Pomona would fain confine their votaries. And, in the long run, the profit to the individual, nor less to the Society, is greater, as we manage. The Florist, or Pomologist, who can win premiums in competition before the judges whom it is our fortune to possess, may safely challenge impartial judgment at any horticultural exhibition, I care not where held. It was so when Merrifield and Salisbury swept the Massachusetts board of its prizes; and Blake and Hixon furnish constant proof that there is no degeneracy in the later generation. So may it be ever; excellence continuing our sole aim and ultimate attainment.

We offer premiums for superiority of Flowers, Fruits, or

Vegetables; and, so far as we adhere to the standard set up by ourselves, may claim to be measurably successful. But do we exalt or degrade Pomology when in one breath recommending Hornét Raspberry and thereafter strike it from our list? When we depreciate Durandeau Pear below Paradis d' Automne, traversing the knowledge and traditions of the elders! When we relegate Dix—a standard variety of our own Massachusetts—to the rear in inferior rank with Frederic Clapp, wherof the sole claim to notice was ever and only that its trumpet was blown from Boston, whose geese are invariably swans! Practically, you declare the Worden Grape to be worthy of higher appreciation than Lindley, or Massasoit, and of twice the value of that unequalled out-door variety—Iona! Even Niagara and Pocklington take precedence of Iona in our schedule, although there is little market for them, since appetite cannot be coerced; and Green Mountain is promoted from that forlorn awkward squad whose pulp is insoluble as its juice is indigestible, of possible value in a State of Prohibition, mayhap, but which even in such a benighted region must surely set the children's teeth on edge. By what rule are we guided in framing our schedule, presumably challenging excellence in its several classes! Shall we discard all that D. Waldo Lincoln and John Milton Earle commended,—those choice kinds that Colton, Jaques and Ripley imported because better than most that we then had! A generation since these worthies sat down in this library, and applied themselves to a close analysis of specimens fully grown and thoroughly ripened, putting upon record their judgment as it has been transmitted to us, in the reports of the Society, through the columns of the *Spy*. Shall we impeach the delicacy of their taste or the soundness of their conclusion? Yet, every year, not being much wiser than they, accepting some hastily formed prejudice, in sheer abnegation of material test and decided preference, we tear our schedule in tatters, adhering to nothing, unsettling everything. Can we assign a valid excuse for this continual scaling down, and paring off from our early standards of excellence? Yet varieties are degraded, if not discarded without so much as a why or wherefore, although they passed

muster in keenest rivalry among the most expert pomologists of England and France for their points of conceded preëminence; subsequently attracting attention and constraining purchase by our founders above-named, ever alert to secure any fruit worth having. Order, not change! is Heaven's first law. Because only one or two of our members exhibit a fruit of manifest first quality, shall we therefore reject or degrade it? Some one must be first to introduce it. If others approve its quality, it may or not be widely disseminated, which it certainly will not be, if the Society remain blind to its merits, or precipitately discards it after brief recognition. Quite a lifetime is needed to enable a satisfactory test of the qualities of such enduring fruits as are comprised in the genera—Apple, or Pear. A suitable decision cannot be based upon individual craving for premium or gratuity, but rather upon a continuous trial of flavor and texture in the original package, or upon the approval that may be finally awarded after the pie has been comfortably digested. It is a rule of the common law—*stare decisis!* Shall it enure to the advancement of Horticulture to build up, merely to tear down, a house of cards! Says a writer in the *Gardener's Chronicle* (Eng.):

"It seems a pity that most of our best pears are fast going out of cultivation, and this, on account of large, worthless varieties taking their place. It is a pity that such delicious kinds, as Seckel, Comte de Lamy, Ne Plus Meuris, Winter Nelis, Thompson, Dana's Hovey, and others, that do not find favor with judges on the exhibition table, do not receive more attention."

Such, and so universally conceded, is the preëminence of Seckel that we could not, if we would, ignore it, although contenting ourselves with the trees that we already have. From afar,—even from the remote orchards of Tremont Street, is borne to us the acclaim of Dana's Hovey, "horns" of Boston, "so thin and clear," transmitting its local repute, which judgment, if we do not approve, we are given to understand, with a certain condescension, derogates by so much from our common sense and pomological knowledge and standing. Winter Nelis has been mentioned elsewhere in the reports of your Secretary,

and never without just commendation. In England and France, the great Pear-growing countries of the world, wherein curiously enough the varieties of *Pyrus Communis*, unlike those of *Pyrus Malus*, that are of signal excellence and most thrifty, are likewise unsurpassed throughout our broad Republic, it ranks with the very best three,—whether for exquisite flavor or late keeping. For another of that trinity, you suffer Marie Louise to exhaust itself through sheer fecundity, subjecting it thereafter to a penalty for the inevitable depreciation which you were too indolent to prevent. You do not,—or will not,—grow Josephine de Malines; electing rather Angoulême or Clairgeau, than either of which, to a healthy appetite, a White Egg Turnip more agreeably waits upon digestion. Stars upon the catalogue of the American Pomological Society, in whose deliberations we participate and by whose judgments we should be concluded, count for nothing! our schedule being controlled by individual whim or prejudice; although our early records are crowded with testimony of the prophets and apostles of our local pomology, by whom the faith once delivered to them was treasured up for us in the hope and faith of its care and ultimate preservation. I would not interpose the least obstacle to the onward march of progress, if only its steps are assured. But I would be certain that the step is in advance; and insist upon positive proof of decided advantage before discarding the hardly-earned lessons of a half-century of experiment and instruction.

Under the caption,—"Boston Board of Trade—Mad,"—the *Herald* of our metropolis, on Sept. 6th, ult., scores the N. Y., N. H. & H. Railway Company for its dilatoriness, lack of accommodation, and high rates of charge, throughout the past season, whereby the transporation of fruit,—the Peach especially,—was seriously retarded, to the great loss of New England. The complaint of Worcester weighs as heavily, if not against the same corporation. Fruit cannot await the convenience or endure the spite of any common carrier. It must be picked in advance of ripening to reach its market in any sort of fair condition; a delay that would not be sensibly felt with Apples or Pears being fatal to the continuance in soundness or texture of

the softer fruits. Now we prefer to grow our own Peaches, and do so when we can. But for some cause inscrutable as yet, we cannot rely upon a sure harvest whether of cling- or free-stone. Therefore we seek to trade with Hale, recking little if he counts himself a citizen of Connecticut, or Georgia, and being unwilling to submit to any interruption of our traffic that is without adequate excuse. The influence of this Society, if not its official coöperation, should surely be cast upon the side of every effort that promises to facilitate the utmost freedom of trade between the States of the Republic! A freedom whereof the desire tended more than aught else to promote a more perfect union; and in the absence of which we should find but wretched substitutes in custom-house and standing army.

In the matter of publicity, during these latter days, wherein is involved the comparative utility of entire ignorance or presumptuous misinformation, how shall we decide! Shall old creeds pass away and all things, if only novel, obtain acceptance? Yet a writer of prominence, in the *Massachusetts Ploughman*, treating of the growth of "Small Fruits," runs counter to all standard authority, audaciously declaring that the planting of them should be done in Spring instead of Fall. Yet in Spring, when the ground is free from frost, there is apt to be a series of weeks in which no rain falls, and drought, more or less severe, usually supervenes. Whereas in Autumn the fine, hairlike rootlets start rapidly into growth and, if not favored by timely rain, are sure to derive benefit from seasonable snows unless, which is rarely the case, the earth may have frozen prematurely. Again: speaking of Raspberries, the writer declares that "of the red, or sucker varieties, he does not know that the land can be made too rich." Possibly not,—as he understands it; yet, when rich enough, why waste an excess of manure that is sorely needed in corn-field or orchard! Years ago that theory of Manure and Manure yet again was preached as a sort of saving grace for the degeneracy of Pears. And so our patriarchs—Butman and Rice*, with others, their peers—wearied not in the application of stimulating material, little ap-

*George T.

prehending or at best reckless of that result from consequent surfeit,—inertia, or absolute paralysis of the very soil. Their harvest, for a while, was large,—their specimens unsurpassed. But, in a short while, the orchards of Allen and Ripley, of Stebbins and Townsend, fertilized with judgment but never grossly, assumed their proper position at the head of our line, enabling their zealous owners to exhibit fruit that easily earned a preëminence dearer to such unselfish horticulturists than all the dollars that could be proffered in mercenary lure. The personal experience and observation of your *Secretary* dating from the naturalization of the Antwerps in 1832, conflict positively with the theory and practice of the writer under review. A strong clay soil, turned by the spading-fork, has been found to be most congenial for that best and fairest of all varieties which man cares to eat! Brincklé's Orange. The case was similar with Northumberland Fillbasket, Baumforth's Seedling, and Hornét, all which were first imported by me to be introduced into local cultivation. From such original plantation they have pushed their suckers into and through walks built and compacted of anthracite coal ashes, putting forth thrifty shoots and sending up vigorous canes. Whereas in loam, rendered pliable and loose through the constant application of manure, the wood of the Raspberry becomes soft and sappy, a swift prey to fungus or frost; on the contrary it derives heart and, as it were, stamina from the grit and flint that are too easily assumed to be adverse to its proper development. The wide circulation of the *Ploughman* renders it all-important that its statements should be accepted with caution, and criticised when known facts appear to challenge their very foundation as pomological authority.

And this reference to the Raspberry—*Rubus Idæus*—makes it pertinent to remark that the cultivation of that berry appears to have been almost entirely given up by our Members. Perhaps, as a matter of dollars and cents, this should occasion no surprise. There are many with whom the Raspberry does not agree. There are more who, having partaken of the Onion for their first course, do not crave Raspberries for dessert. Yet it is the one Small-Fruit, in technical designation, that will

bear keeping on ice; that is better for being so kept smothered in cream, whereas the Strawberry would be spoiled by similar usage; and that, whether fresh or preserved, retains its own exquisite, peculiar flavor unimpaired by any method of treatment. A few stools will supply a family owning a small homestead, amply if not profusely. Better buy your Strawberries and escape that "tired feeling" which no one can avoid save the boy whose knees are limber enough to stoop for one if, haply, he may eat two!

The practical failure of the Currant, ordinarily so hardy that its yield can be reckoned upon with certainty, is noteworthy if only for record. It may be that the Frost which followed so nearly upon those intense heats of May whereby all forms of vegetation were forced forward so rapidly, should be held responsible for more than the early lethargy or decimation of the Currant-Worm. The bud and blossom of that especial fruit are usually indifferent to excessive or untimely frost and storm. But when all are precipitated in quick alternation, with now and then a deluge of rain to wash pollen in impaired vitality, even the old-fashioned sturdy Currant-Bush of Massachusetts may well be excused if it fails to yield all the service that we have been wont to exact from it.

The Cherry has always found a congenial home in Worcester; but that good fortune, so far as concerns the fruit itself, has not insured an unfailing yield of Heart or Eagle. In the present calendar year, for instance, there were no specimens of Elton, Black Tartarian, Black Eagle, or Downer's Late Red exhibited on July 11th, the date appointed by your Committee on Exhibitions. Following days of excessive, unseasonable heat were drenching showers and humidity that wilted what it did not blight. Thrifty trees, under the direct observation of your *Secretary*, in a night as it were, developed a harvest of rottenness. Yet remarkable specimens were shown by Miss Gary of Austin *Street*, without much doubt a chance seedling from Black Eagle, and possessing every merit of its putative parent with higher development of flavor and firmness of flesh. During the latter part of July there could be seen upon the stands of our

largest fruiterers a striking novelty in Cherries, reputed to have come from Oregon, which had been duly christened, or nick-named in sport, "Black Republican"! Despite its long journey and suspicious name it was perfectly sound, and so remained, plainly manifest, for days. Its flesh was very hard, of a liver color, and its size was almost half again that of a fully-grown Tartarian. The texture of its flesh was such as to suggest Tradescant's Black Heart, sometimes misnamed Elkhorn. If that variety from the Pacific coast, under its slang or true name, can be naturalized here in Worcester, it ought to prove a decided acquisition. And that it can be so naturalized its perfect condition, after prolonged exposure, would seem to establish beyond question.

Malum, *Pyrumque*,—first cousins as it were,—many of like exquisite beauty and perfection of flavor; yet, for some reason hitherto inexplicable, while one will bear profusely during successive years, the other coyly refuses aught more generous than a biennial harvest. This year, as last, Bartlett, Bonne de Jersey, Bosc and Comice, bend beneath their superabundant burden; but Astrachan, Baldwin, Greening and Northern Spy, A. D. 1895, are apparent only in that vacuum pronounced the abhorrence of Nature, and yet for which Nature through her mysterious processes, must be held responsible. Shall nothing be found out to remedy this grave defect in pomological generation? Shall we fold our hands in supine indifference to an inertia of Nature so seriously affecting our material interests and, not less, our bodily welfare? The Treasury of the Commonwealth is depleted in a futile struggle to countervail Insect Fecundity. Has the first practical step been taken to determine if it is utterly hopeless to expect, sometime in the future it may be, an annual harvest of Apples? Individual effort can accomplish little. Any of countless obstacles may interrupt private experiment even should not Death intervene between the trial and its prosecution. But the Agricultural Colleges and Experiment Stations, founded by Federal, and fostered by State, bounty, endure co-eval with civil institutions, and to them we have a

right to look for a solution of this problem so vital to individual thrift and public prosperity. We might worry along without forest or shade trees. But would life be especially worth living, throughout the frosts and snows of a New England winter, deprived of our standard fruit, as we may yet be, entirely! Who shall say, in our complete ignorance of the cause why a tree is barren every other year, that it may not refuse its yield at the periods when it has hitherto borne to exhaustion! There must be a reason for such regular, assured intermission, whether we know it or not. The spasmodic attempts that we have made to solve the mystery,—shearing of blossoms and thinning of sets,—are foredoomed to failure from the first. The generation of *Ocneria dispar* is incessant,—endless. Still the public treasure is lavished in a futile effort to suppress that infinite fecundity. Pomology is left to fight its own battles, as best it may; and not a hand is lifted, not a voice raised in behalf of this most important product that our soil should surely yield. This very Hall is resonant with chatter and din of wordy champions who kill time, if naught else, by vociferous declamation upon the beneficent influence of qualified Tuberculosis upon the animal and human systems. Just contrast last year with this! There is scarcely a man before me who did not gather from his Orchard a superfluity of Apples wherewith to glut the Home-Market, or to supply the wants of foreign consumers. But now the puzzle with most of you must be,—If you indulge in Apple-Pie on Thanksgiving, will you not have to gnash your teeth at Christmas? And leaving out of consideration that the silver which jingled so melodiously in your pockets, last Autumn, when you could find yet one more barrel of Baldwins for successive customers, might as well not be coined for all the good it can do those whose sole harvest has been foliage and caterpillars. It so happens that the Orchards of England,—our best customer,—have borne profusely, the current year. But there was never a time, within the memory of living man, that the Apples of Worcester County, preëminently among others, did not, from superior beauty and flavor, command their own market at Covent Garden, despite competition. Even now, in mid-October,

we get the subjoined quotations, in the most thrifty boroughs of Scotland, for the following varieties of Apples:

King	18 @ 21	Shillings.
Baldwin	16 " 18	"
Greening	11 " 13	"
Northern Spy	13 " 16	"

From London comes the report that " by the end of October the market will be sufficiently cleared of Native Apples to make a demand for good American Apples." But, at that date, the exports this season had been about 37,000 barrels against 134,-000 barrels to the same time A. D. 1894. Note that the prices given above were shillings sterling; in excess of Three or Five Dollars per barrel according to the variety. Now presumably, your *Secretary*, like a true Yankee, values the Apple for its own sake;—not at all because of its greater or less parity in silver. He is unfashionable enough to believe in Pie! and sufficiently a philosopher to shield himself behind the example of Emerson in owning up to a craving for that common, popular relish. It is therefore that he welcomes the even-numbered year with its felicitous accord of fecundity and quality; and hearkens during the digestion of each appetizing morsel to the melodious chink of the white metal as it weighs down your pockets in exchange for your superfluity of our noblest, if most unreliable, fruit.

" The English market," continues the report, " would take our Apples, if sound;" but we have them not, even of inferior quality. Why not! let me again ask; the question that will not down until the puzzle finds its solution. Think of the area of land in this county that is so well fit for no other harvest! More than a half-century ago Sampson V. S. Wilder planted the fertile acclivities of Bolton and Sterling with those vigorous Orchards wherefrom Jonathan Forbush was wont to load our tables and enrich our early exhibitions. Now, we are privileged to see no specimens from a wider radius than will comprise our immediately co-terminous towns! Is the same land put to better or more profitable use,—or merely surrendered to Birch and Solidago? The thrifty Town,—our goodly neighbor,

wherein Joseph C. Lovell was so assiduous in persistent and skilful experiment, must be ruthlessly submerged, without a voice raised in remonstrance, that a shiftless waste of water may be continued in the metropolis, whose inhabitants might easily save enough from bath or wash-tub to quench all the thirst they ever experienced for that malarious and maleficent liquid. Reflect upon the income whereof you are deprived because you will not apply yourselves, with inexorable purpose, to ascertain and determine beyond peradventure the cause of this regular, if intermittent, barrenness. Since the above was written, on the 28th October ult., but nine days ago, quotations of prices for varieties in which we are most directly concerned, in the London market were as follows:

Baldwin	14s. 6d.	@ 17s. 6d.
Greening	11s. 6d.	" 12s. 6d.
Northern Spy	14s. 3d.	

Does not such valuation confirm the prediction that in the exhaustion of the earlier native supply would be found an opportunity for good American Apples!

March 3, A. D. 1842, this Society accepted a charter from the General Court and by the explicit terms of that instrument, engaged—"To advance the science and encourage and improve the practice of Horticulture." For that purpose, with a view to promote the objects of its organization, it has been able in the course of time, through frugality in management and the bounty of generous members, to accumulate means wherewith to construct this Hall. In this Horticultural Building, scrupulously restricted within its legitimate dedication, there have been the will and facilities, as occasion served, to extend a helping hand in the formation of numerous societies, of very like intent, and cognate direction with our own. Many years ago we tendered our hospitality to gentlemen who sought to found a New England Agricultural Society. That formation still exists, although its founders were long since gathered to their fathers. Subsequently, there were opportunity and wish to accommodate the large number desirous of evoking form and order from the methods of mismanagement sadly conspicuous in the conduct of

the New England Society; and to this hall does the Bay State Agricultural Society trace its origin. The youngest among you can recall the very recent nativity of the "Massachusetts Fruit Growers," who did us the honor to select for their president a gentleman in whose expert service as judge of fruits we have had such prolonged and ample cause to rejoice. And now may we not justly pride ourselves upon the fact that Mycology has been deemed not wholly unworthy our attention; and that such facilities for its study as we possess, or can obtain, are held at the call and service of those who would master this useful, if somewhat humble, knowledge. In return, as sole compensation for the aid thus freely rendered to those who would broaden the province of Horticulture, it is our satisfaction to know that we have never wearied in well-doing; but contributing from our substance to all good works, have been steadily required to pay heavy tribute to Cæsar. We submit to what is neither more nor less than exaction; but it is with ill grace. We pay tribute, since we cannot help ourselves; but reflect the while upon that bold evasion of the Bill of Rights which disregards the equality of every citizen before the law and imposes burdens grievous to be borne upon those whose only motive for existence (corporate!) is an unselfish ambition to foster wholesome science and improve its practice. Whether or no,—we will continue to promote every enterprise, within our scope, that has for its motive the advancement of humanity and, to that end, strive to stimulate the better cultivation of Flowers, Fruit and Vegetables. To all such our hall is thrown wide open, although the assessors lock step with the audience as they enter. Some efforts may be fruitless, yet they will be a common misfortune and not our especial fault. Some forward steps may be taken in Horticultural science and practice; and for such advance we may pride ourselves as one of those who have found a better use for their talent than burial in a napkin!

As I look around upon this audience and note how few of the faces, once so familiar, are left to return my gaze; as I am reminded by this apparent, if not actual, loneliness, how recent

has been the accession to the Society of most of you compared with my own service of now fifty years; I am tempted to wonder if you clearly appreciate your solid position as members of this Worcester County Horticultural Society! Has it been impressed upon you as a vital, ever-present consciousness that you are not alone "citizens of no mean city," but that your association with this especial Society lends dignity to yourselves as individuals and enforces respect for the municipality wherein you elect to dwell. Perhaps, as one of the very oldest among you, who is spared while all around him, youth and age, have been gathered in indiscriminate harvest, it may be permitted me to exhort you to keep ever in mind your high privileges, and to maintain them unimpaired so far as constant vigilance will permit. You constitute one of two,—certainly not more than three,—societies, specifically organized and designated Horticultural, that enjoy repute, have earned sound credit and character, and possess subtantial property that is free from onerous encumbrance. You admit, welcoming even, all who are worthy, from street or lane, from town or farm house; but then, let all, when associated, become loyal horticulturists! We want neither Goo-goos! nor Garoos! neither A. P. A.'s,—nor Americans that are ineradicably Irish. Admit plain farmer, or titled granger; original Yankee, or receptive foreigner; drawing the line at turbulent Huntschagist or unspeakable Turk! For traditions trace back to Eden wherein was—"a Garden *(Hortus)* eastward," in which was put the man "whom He had formed, and from the ground whereof He made to grow every tree that is pleasant to the sight and good for food." Our lines are cast in pleasant places, if so be that we are minded to enjoy them. Heat may be oppressive at times; and then again the mercury falls below zero; to exceeding gain of the coal trust! Also drought occurs, as the men who have idle dams to sell are well aware. But so, in emergency, supervene spells of thirty-six hours, in which the flood-gates of heaven are open, a half-foot of rain refreshing the parched earth without leave or purchase from "protected" manufacturer. As individuals, you would fare no better, it matters not where you

went. As associated horticulturists, you can find choicest Apples or Pears at home, as good Peaches as any of which California or Georgia can boast; and may grow, with perfect assurance of success, such a profusion of flowers as would suffice to replace every tint of the rainbow, were the original pattern unhappily lost. Be not led astray then, in strange paths nor suffer yourselves to be deluded by tempting contrivances of the adversary! Remember always that it was from Eden that you were beguiled, originally! Keep the home that you have been so fortunate as to acquire sacredly dedicated to its legitimate purpose; nor ever allow it to be perverted therefrom, no matter what, or how plausible, the pretext. Horticulture, within the scope of its entire comprehension, has its own noble aims;—ample for the exercise of any ambition. Confine yourselves closely within its limitations and you may live lives of abounding usefulness, while your children shall rise up and bless your memory.

All which is Respectfully Submitted

[by]

EDWARD WINSLOW LINCOLN,

Secretary.

Horticultural Hall,

Worcester, Massachusetts,

7th November, A. D. 1895.

REPORT OF THE LIBRARIAN.

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To the Members of the
Worcester County Horticultural Society.

Your Librarian respectfully submits the following report:

During the past year the Library has been open every day, Sundays excepted, from 8 A. M. to 6 P. M., proving a great convenience, not only to our members, but others interested in investigating special lines of Botany during the Summer.

The following Books, Periodicals, and Papers have been added during the past year:—

United States Department of Agriculture:

Agricultural Library Bulletins. Accessions to the Department Library, July 1, 1894, to July 1, 1895.

Report on introduction of Domestic Reindeer into Alaska. By Sheldon Jackson. 1894.

Farmers' Bulletins Nos. 21, 22, 23.

Weather Crop Bulletins. Weekly. New England Division.

Report of the Secretary of Agriculture for 1893.

Report of the Assistant Pomologist. W. A. Taylor. 1893.

Bureau of Education:

Report of the Commissioner of Education. Vols. 1 and 2. 1891 and 1892.

History of Education in Connecticut.

History of Education in Tennessee.

History of Education in Iowa.

History of Education in Rhode Island.

History of Education in Maryland.

Bureau of Statistics:

Consular Reports. Nos. 170 to 181, inclusive.

Civil Service Commission:

Tenth Report, July 1, 1892, to June 30, 1893.

Eleventh Report, July 1, 1893, to June 30, 1894.

Connecticut State Board of Agriculture and Experimental Station. T. S. Gold, Secretary. Report for 1894.

Cornell University Agricultural Experimental Station. Bulletins Nos. 74 to 100, inclusive.

Michigan Agricultural Experimental Station. Bulletins Nos. 113 to 121, inclusive, and Nos. 125 and 126.

Special Bulletin. When and What to Spray.

Rhode Island Agricultural Experimental Station. Bulletins Nos. 29 and 30.

Massachusetts State Board of Agriculture:

W. R. Sessions, Secretary. Report for 1894. 20 copies.

Massachusetts Crop Reports. Series of 1895. Bulletins Nos. 1 to 5, inclusive.

Hatch Experimental Station. Bulletins Nos. 26 to 29, inclusive.

Meteorological Observations. Bulletins Nos. 69 to 81, inclusive.

Bulletin. Special Fertilization of Garden Crops. Prof. C. A. Goessmann, Amherst College.

Bulletin. Plant Diseases. George E. Stone, Amherst College.

Acts and Resolves passed by the Massachusetts Legislature, Session 1895.

Massachusetts Horticultural Society Transactions. Part 2, 1892. Part 3, 1893. Part 1, 1894.

Field Columbian Museum. Publication, No. 1. Vol. 1. A Historical and Descriptive Account of the Field Columbian Museum. Chicago, Dec., 1894. Fred. J. V. Skiff, Director.

Worcester North Agricultural Society. Transactions, 1894. Premium List, 1895. George Cruickshanks.

Worcester Agricultural Society. Transactions, 1894, including By-Laws and Membership. John B. Bowker, Secretary.

Worcester Parks-Commission. Report, 1894. Edward Winslow Lincoln, Chairman.

Inaugural Address for 1895. Hon. H. A. Marsh, Mayor.

Harvard Graduates' Magazine. Vols. 1 and 2, and No. 1 of Vol. 3. Edward Winslow Lincoln.

Grasses of the Pacific Slope, including Alaska and the adjacent Islands. Dr. George Vasey, Botanist of the United States Department of Agrculture. Part 1, Oct. 20, 1892. Part 2, Jan. 1, 1893. From Joseph Jackson.

Georgia State Horticultural Society, 16th Annual Meeting, July 29 and 30, 1891.

Fruit Growers' Association of Nova Scotia. Transactions, 1874 and 1883 to 1890, inclusive.

Profits and Cost of Fruit Growing in Nova Scotia. S. C. Parker, Secretary of Fruit Growers' Association.

Through Glade and Mead. By Joseph Jackson. 1895. From Joseph Jackson.

The Knight Templars' Souvenir. Boston Conclave. James Draper.

The Index. Published by Junior Class of the Mass. Agr. College. Vol. XXVI., 1894. A. S. Kinney.

A Souvenir of the Celebration of the Fifty-fifth Anniversary of the Worcester City Guards. Sept. 19, 1895. Lieut. Samuel Hathaway.

Purchased by the Society:

A Treatise on the Physiology of Plants. Paul Sorauer. Translated by F. E. Weiss.

A Guide to find the names of all Wild Growing Trees and Shrubs of New England by their Leaves. E. Knobel.

In the British Guiana. James Rodway. 1894.

The Diseases of Trees. Prof. R. Hartig. Translated by William Somerville. Revised by H. Marshall Ward. 1894.

Protection of Woodlands. Herman Furst. Translated by John Nisbet. 1893.

The Flowers of Japan and the Art of Floral Arrangement. J. Conder.

Sylva of North America. Sargent. Vols. 7 and 8. Dewey Fund.

The Wild Flowers of the North Eastern States. By Ellen Miller and Margaret Christine Whiting.

Journal of Horticulture. 2 vols. Nos. 28 and 29. 1894.

Manual of the Mosses of North America. By Leo Lesquereaux and Thomas P. James.

Gray's Botanical Text Book. George Lincoln Goodale. 1885.

The Natural History of Plants. From the German of Anton Kerner. By F. W. Oliver, with assistance of Marian Busk and Mary F. Ewart. Vol. 1. Parts 1 and 2.

Choice Ferns. 3 vols. By George Schneider.

Les Fleurs de Pleine Terre. A description and the culture of annual, bi-annual and bulbs. By Vilmoren Andreux & Co., and Edouard Andre. French.

Curtis's Botanical Magazine. Vol. 50. 1894.

Synopsis of North American Lichens. Part II. Ed. Tuckerman.

Genera Lichenum; an arrangement of North American Lichens. Ed. Tuckerman.

Descriptive Catalogue of the North American Hepaticæ. By Lucien M. Underwood.

The Woods of the United States. Jesup's Collection. By C. S. Sargent.

The Orchids of New England. Henry Baldwin.

The Forester. 2 vols. Brown and Nisbet.

Through Glade and Mead. By Joseph Jackson. 1895. Large volume. 25 copies of the small edition to use for gratuities.

Forest Flora of Japan. Notes on the Forest Flora of Japan. Charles Sprague Sargent. 1894. Quarto.

Mushrooms—How to grow them. Falconer. 1892.

About Mushrooms. Julius A. Palmer. 1894.

Edible and Poisonous Mushrooms. M. C. Cooke. 1894.

Our Edible Toad Stools. W. Hamilton Gibson. 1895.

Town Records, 1822 to 1827. Births, Marriages and Deaths. Part 1. Vol. XII. 1894. F. P Rice. Worcester Society of Antiquity.

Amateur Gardening.

American Florist.

American Gardening.

Country Gentleman.

Florist Exchange.

Farm and Garden.

Garden and Forest.

New England Homestead.

Massachusetts Ploughman.

Meehan's Monthly.

Gardening.

Rural New Yorker.

Daily Spy.

Agricultural Gazette. English.

Garden. English.

Gardener's Chronicle. English.

Gardening, Illustrated. English.

All of which is respectfully submitted.

ADIN A. HIXON, *Librarian*

HORTICULTURAL HALL,
WORCESTER, MASS.,
November 6, 1895.

REPORT OF THE TREASURER.

The Treasurer of the Worcester County Horticultural Society submits his annual report for the year ending November 5, 1895.

He congratulates the Society upon the improved state of their finances, the receipts from the rent of the hall show a gratifying increase over that of the previous year, and the prospects for the coming year would indicate still better returns.

It should be borne in mind, however, that there is still a debt of $11,400, with the interest steadily accruing.

The funded debt of the Society has been reduced the past year $1,500 and the Treasurer trusts that the next year will show a still greater reduction.

The receipts and disbursments have been as follows:—

Dr.

1894.			
Nov. 2.	Balance, as per last report,		$ 530.74
1895.			
Nov. 5.	Receipts to date:		
	From rent of stores,	$6,000.00	
	rent of hall,	4,411.92	
	membership fees,	61.00	
	Chrysanthemum exhibition,	114.00	
	tickets to banquet,	142.00	
	Dewey Fund, for books purchased,	43.16	
	interest on bank deposit,	29.42	
			$10,801.50
	Total,		$11,332.24

Cr.

1895.			
Nov. 5.	Payments to date:		
	By city taxes and water rates,	$ 803.04	
	paid on mortgage note,	1,500.00	
	premiums paid,	1,947.55	
	paid judges,	150.00	
	for coal,	260 93	
	for gas,	766.54	
	interest on loan,	669.72	
	salaries,	1,645.79	
	A. A. Hixon, expenses at hall (including janitor),	913.79	
	for printing,	375.80	
	books and stationery,	123.84	
	on account of banquet,	111.20	
	repairs and improvements,	700.65	
	for china, etc.,	60.43	
	rent of box at Safe Deposit Co.,	10.00	
	Total,		$10,039.28
Nov. 5, 1895.	Balance of cash,		1,292.96
			$11,332.24

THE F. H. DEWEY FUND.

Balance, as per last report,	$1,000.00	
Received interest since,	60.80	
		$1,060.80
Paid for books and periodicals,		43.16
1895. Nov. 5. Balance of fund,		$1,017.64

Respectfully submitted.

NATHL. PAINE, *Treasurer.*

Nov. 5, 1895.

The undersigned hereby certify that they have examined the accounts of the Treasurer, and find the same to be correct and properly vouched, and that the cash balance is accounted for.

HENRY L. PARKER,
F. H. CHAMBERLAIN, } *Auditors.*

WORCESTER, Nov. 5, 1895.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

A. D. 1894-95.

PART II.

Worcester, Mass.
CHARLES HAMILTON, PRINTER,
311 MAIN STREET.
1895.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY.

10th January, A. D. 1895.

ADDRESS*

BY

HON. HENRY L. PARKER, PRESIDENT.

BEFORE proceeding to the topic which I have chosen for discussion, I desire to congratulate the Society upon the successful work of the past year. While it is true that financially the Society has not escaped the effects of the general business depression, yet in exhibitions, in the interest and enthusiasm of its members and the influence of its work upon the general public, as manifested by the largely increased attendance upon its weekly displays, there has been a marked advance over all previous years. Especially noticeable were the displays of the foliage of rare shrubs, shade and ornamental trees, and wild flowers in their season.

This is a new feature in our exhibitions, but that it has already won the popular favor is manifest from the attention and study which these collections attracted from visitors. It is a feature which should receive encouragement, for it is in line with what President Hall (in his speech at our recent banquet) claims should be one of the missions of this society, viz.: To cultivate and bring back a renewal of that love of nature which is inherent in every human breast, but which the congestion of our cities and large centres of population, the associations and ways of metropolitan life, have a tendency to efface.

*Written out from recollection by request of the Committee on Publication.

Our Society may also feel proud of the fact that one of our members, Prof. Joseph Jackson, has published during the past season a book which will be appreciated by all lovers of nature, "Through Glade and Mead." While its style reminds one of Burroughs and Thoreau, and every page breathes an invitation to the woods and fields, it contains also information of great value. Its classification of the flora of Worcester County, the most exhaustive which has ever yet been made, should give it a place in the library of every student of botanical science.

But my purpose to-day was to speak upon the subject of "Fruit Growing in the Annapolis Valley"; and by the Annapolis Valley I mean, of course, the region known by that name in the Province of Nova Scotia.

More by accident than by design, I spent a few days in this region last summer. In the Annapolis Valley lies the scene of Longfellow's "Story of Evangeline or the land of Acadia." But the whole Province was anciently known as Acadia, and in the old geographies of the French it is described as a barren, inhospitable, almost uninhabitable region, extremely cold, and fettered for a good portion of the year with ice and snow. But either the old geographers made an egregious mistake, or the temperature has become most wonderfully modified since those old days: for although the latitude is that of Northern New Hampshire and Vermont, all the fruits which flourish with us (except, perhaps, the grape, which can only be grown in favored localities), ripen there in abundance and perfection; all our varieties of pears, peaches, plums, as well as all the small-fruits, —strawberries, raspberries, currants, gooseberries. I said to them, "How can you do it? How can you raise all these fruits with your low temperature and fog?" But they said, "We have no low temperature. It never reaches zero more than once or twice during the cold season and never goes more than seven below, and we have no fog. You see those mountains?" (A range of mountains extending along the coast for twenty miles to the northwest and called the Colbequid or North Mountains). "Those protect us from the northwest gales and the sea-fog. You see some mornings the fog rising over the tops of the

mountains and curling over a little and then receding. It never comes down into the valley." And the words of Longfellow in "Evangeline" came at once to mind,

> "Aloft on the mountains sea-fogs pitched their tents
> And mists from the mighty Atlantic looked on the happy valley,
> But ne'er from that station descended."

And it was indeed a happy valley—the people thrifty, intelligent and contented, as we might expect when we reflect that the larger portion of them are of New England stock; for after the expulsion of the French Acadians, the country was settled by colonists from Massachusetts and Connecticut. And the soil possesses a fertility surpassed by few other spots on the continent. There are several square miles of dyke land, reclaimed from the sea, with a soil from six to eight feet in depth of a rich loam. This dyke land has produced for generations, and without the application of any fertilizing material whatever, from one and a half to two tons of hay to the acre. The loam itself is used as a fertilizer. It is carted to the upland during the winter months, and as a mulch for trees is preferred by many to the best barnyard compost. The staple crops are hay, oats and potatoes. Three hundred bushels of potatoes to the acre and fifty bushels of oats to the acre are not uncommon.

Fruit growing, however, is the principal industry. Raspberries are produced at the rate of five thousand quarts to the acre.

Plums grow there in perfection. I noticed there nearly all the varieties grown with us,—the Lombard, the Washington, the Bradshaw, the Gages,—and every tree loaded to its utmost bearing capacity.

Fruit growing is not only the principal industry but everything else is subordinate to it. It is the principal topic of discussion. The very air seems filled with an afflatus from the orchards. The greatest interest centres, of course, in apple culture; as the apple, from its foreign market, is the source of the greatest revenue. And if in the culture of the apple the orchardists of the valley have achieved success, it is because they have earned and deserved it; because they have pursued it with

an energy and persistence which has amounted to enthusiasm. The land is first highly fertilized for the orchard and the trees well planted. After planting and while growing, the trees are constantly kept mulched and the soil stirred up. Crops of buckwheat and other cereals are sown and then ploughed under as fertilizers. The trees are kept pruned as they grow, and as they come into bearing condition they are looked after with unremitting attention. In the early spring the trunks are washed with soaps, those of the older trees being scraped.

The foliage is sprayed with kerosene emulsions and Paris green. Search is made for borers; and with the first blossoming the pruner begins his work. The fruit is thinned as soon as set; and from the first putting out of the foliage until the fruit matures, the orchard is visited with spade and pruning saw.

The result of this care was seen in fair, perfect fruit, and a bright, healthy foliage.

The apple growers of the valley claim, that for fine flavor and in keeping qualities, their apples beat the world. The first claim I think is not sustained by facts.

A collection of choice samples was sent to the Massachusetts Society a few years ago from the Association; and that Society reported, that while conceding them a first place in keeping qualities, yet in flavor they were second to Massachusetts apples. But it is certain that no apples sell better in the London market than the Province apples. They command a higher price than apples from the States.

But few varieties are in general cultivation. Those found the most profitable for cultivation are the Gravenstein, Ribston (an English apple), King of Tompkins Co., Blenheim, Golden Russet, Fallawater and Nonpareil. The Gravenstein is the general favorite. Ask any apple grower to name five or more best varieties for general cultivation, and his list will always begin with the Gravenstein. The Nonpareil is a long keeper. It has been shipped to London in the last of May in perfect condition and sold there for over two pounds per barrel; the same apples have been taken to Paris and retailed at ten cents an apple. The Nonpareil is a small, compact apple, and allowing say six hundred apples to the barrel, it yields you $60.

Other varieties cultivated are the Baldwin,—which is getting out of favor, because some years it does not color up,—the Rhode Island Greening, the Alexander and the Yellow Bellflower, which is better known there under the synonym of the Bishop's Pippin.

It is without doubt largely due to the skill with which the Province apples are packed, that they command such prices in the foreign market. Great attention has been paid to packing and transportation.

The Province of Nova Scotia some twenty-five years ago, boasted of a flourishing Agricultural Society. Sometime in the early seventies a Fruit Growers Association was organized, having its headquarters in Wolfville, in the Annapolis Valley. This Association has usurped the place of the Agricultural Society, and the latter has become, in the valley at least, practically defunct. The Fruit Growers Association is the live Society, and it has accomplished a great work, not only in exciting an interest in fruit culture, but by means of discussions, lectures, and papers, in teaching the best methods of culture. An outgrowth of the Fruit Growers Association is a Horticultural School. An endowment or appropriation has been made for the purpose by the Dominion Government. A large tract of land has been leased for a term of thirty years for experimental purposes. A corps of professors and instructors have been engaged, and during the coming year a building is to be erected.

The moral of what I have been saying is, that granted a good soil, and proper care and attention, good apples can be grown; and the application of this moral we can take home to ourselves.

Worcester County lies in that portion of Eastern Massachusetts noted for the fine flavor and qualities of its fruits; and especially in the flavor of the apple, to no other section of the country or the world does Eastern Massachusetts yield the palm. No other section of the world of the same size has originated more apples in general favor for cultivation than Worcester County. And if our farmers and orchardists would devote to apple culture the same energy and attention they give to market garden-

ing and the culture of small-fruits, Worcester County could beat the world in this industry.

We *do* raise fine apples. No finer apples were ever seen anywhere in size, in color, in flavor, and in all those points approaching perfection, than were exhibited in our Hall during the past Autumn ; but for every plate thus exhibited how many plates there were remaining of imperfect, worm-eaten and worthless fruit, is a question of serious consequence, to be answered only by conjecture. If I were to hazard a guess, the rates would be not less than three to one. Good judges have placed it as high as eighty per cent.

The trouble is, that our farmers and orchardists do not make apple culture a serious business. Instead of making of it a real business, they make it subordinate and auxiliary to something else, and very much auxiliary at that. And if they persist in going forward in this indifferent fashion, in planting their trees carelessly and caring for them still more carelessly, leaving them to fare as best they may in soil poorly prepared and poorly fertilized, unpruned, untouched by wash or spray, a prey to the borer, the codlin moth, the canker worm and caterpillar, and when the fruit is gathered, fill the barrel with good, bad and indifferent all together, and in this condition palm them of upon an unsuspecting public, what right have they then to complain that there is no money in apples? "Do men gather grapes of thorns or figs from thistles?"

Ex-President Hadwen has well said, that in the line of fruits, "the apple is the richest gift the Almighty has vouchsafed to man." It is in more universal use than any other fruit. It can be used in its natural state during a longer period of the year than any other. Its medicinal and sanitary qualities are unsurpassed. And the demand for good apples is constantly on the increase. The foreign market is year by year asking for a greater supply. One grower in Middlesex County has shipped to England the past season, from his own orchard, over two thousand barrels. But for poor, imperfect, indifferent fruit there is no demand, and no market at home or abroad, and never will be.

In this connection, it is interesting to note that certain gentlemen from different parts of the State, specially interested in fruit culture, have in contemplation a Convention in our Hall sometime during the present winter, to consider the organization of a Fruit Growers Association. As Horticulturists, we ought to welcome the advent of such an Association, for it would be in a line with the aim and purpose of our own Society. If organized, it will not be the first kindred society that has seen its birth in this Hall, nor is its mission likely to be the least in usefulness. While such an organization and our own would both feel that they were travelling the same road, yet each would have its own special work,—the one esthetic, the other practical; the one dealing with the question of economics, the other occupying broader ground and ever keeping in view the advancement of horticultural science in all its branches: but each would inevitably help and stimulate the other. The stimulus to apple culture of such a movement cannot be overestimated. We bid it "God-speed."

17th January, A. D. 1895.

ESSAY

BY

O. B. HADWEN, Worcester, Mass.

Theme:—A Century of Pomology.

I am asked to give some recollections of the pomology in New England for the past century. It may not be becoming for one who has lived but three-score years and ten, to attempt an elaborate history, or to delineate the vast progress that has taken place during this period of time.

The early settlers inherited and brought with them the innate fondness of, and the necessity and value, that the garden and orchard contributed to their sustenance and good living; as early as 1621 Edward Winslow speaks of native grapes, strawberries, gooseberries, and plums; records of tree planting come down to us, for, in the year 1648, Peregrine White, the first man born of English parentage in New England, planted the first apple tree, which outlived several generations of men, and is described as a giant of its kind.

The pear tree imported from England by Governor Prince, and planted by him at his homestead about 1640, was described in 1836 as a flourishing tree, when two hundred years old, and then bearing fifteen bushels of fruit a year.

Another pear tree, still standing in Yarmouth, was planted in 1640. Besides these trees, many others planted by the first settlers before 1700, are yet standing, and a still greater number since the commencement of the present century; and while the trees are represented as strong and vigorous growers, the fruit was but of inferior quality, as judged by the present standard.

Many trees of the Hightop Sweeting, still growing in Marshfield, Mass., are reputed to have been planted more than two hundred years ago.

The first apple having originated in New England, that has proved a great favorite, and been widely disseminated over the whole country, is the Rhode Island Greening, having its origin on the island of Rhode Island, in the town of Portsmouth. The original tree stood near an ancient tavern known, in 1765, as "Green's Inn," and for many years it received the appellation of "Green's Inn Apple," it becoming a favorite with the travelling public that stopped at the inn, and was early disseminated over the State and country.

Among other seedling varieties were the Foxwell, Pignose, Bachelor Button, and Pearmains, which, having lived their allotted time, have passed away to make room for the newer and approved sorts now so generally grown.

In the earlier times, the land being new and rich in all the elements requisite for tree growth, the accumulation of ages, trees did not require or receive the care in their cultivation necessary at the present time.

John Josselyn, who styled himself a gentleman, made several visits from England to this country, in 1663, describes fruits growing in New England of the apple, pear, cherry, quince, plum, and barberry trees, and has observed that trees raised from the seed or stone produce fair and good fruit, without grafting, and the country is replenished with fair and large orchards; he also speaks of one Mr. Woolcot, a magistrate in Connecticut Colony, who affirmed that he made five hundred hogsheads of cider out of his own orchard in one year; he did not state whether said Woolcot was drunk or sober, or if it was much of a year for cider, either. George Fenwick and John Mason, of Saybrook, Conn., as early as 1641, are reported as growing the apple, cherry, and peach. The fruit of an apple tree which was given to the Apostle Eliot, with an acre of land, by the Indians, was exhibited at the Massachusetts Horticultural Society in 1833, called the Orange Sweet. Another apple tree imported from England, and planted in the garden of the Wyllis family in Hartford, before 1650, produced fruit in 1822. These interesting relics tend to prove the apple to be long-lived when grown from the seed, as was the custom in the earlier times.

Among the pears of ancient origin, and are interesting relics, are the Orange Pear, planted about 1640; the Iron or Black Pear, said to be more than two centuries old; the Pinneo Pear, of Connecticut, said to be one hundred and sixty years old. An Orange Pear tree, described by Chief Justice Paul Dudley, in 1726, that measured forty feet in height, and six feet six inches in girth a yard from the

ground, and has borne thirty bushels in a season, some specimens measuring eleven inches around the bulge; he also describes a Worden Pear tree measuring five feet six inches around; and one of his neighbors has a Bergamot Pear tree, brought from England in a box in the year 1643, that measures six feet around, and has borne twenty-two bushels of fine pears in one season. The pears grown in the latter part of the last century, and known as St. Michel, St. Germain, Brown Beurre, Virgoleuse, were undoubtedly introduced by the Huguenots, about the year 1685; and it is from these that our earlier native pears have sprung. Cherries and peaches also received some attention early in the seventeenth century. Some cherry trees, planted in 1650, at Bristol, R. I., lived two centuries.

Peaches are mentioned by William Penn. Writing the 16th of the eighth month, he mentions very good peaches, and not an Indian plantation was without them. Peaches were grown from the stone in 1790, by John Kenrick of Newton, Mass., who planted a quantity of peach stones; the process of budding was not then understood or practiced, and trees were grown in their natural state; with this practice, peach trees were long-lived and attained great size, bearing abundant crops in a few years. Subsequently inoculating or budding was practiced, and about the year 1818 the dreaded disease known as "Peach Yellows" was first noticed in the State of New Jersey; a few years later, large quantities of choice varieties of peach trees were brought into New England from New Jersey, and with them the "Yellows" was introduced, and has since remained, and probably will continue so long as budded trees are used, or trees grown from stones procured from diseased trees.

The attempt to prolong the existence of choice varieties of peaches, which is done by budding, has, without doubt, had a tendency to lessen the natural stamina of the peach to that extent that they are unable to withstand the extremes of temperature in this climate, as they formerly did when grown naturally. It is also well known that the "Yellows" does not manifest itself in trees grown under glass, or in the southern portions of the country; hence, we may conclude the peach in its weakened condition cannot resist the disease in our climate. Therefore, the "Yellows" has been the main cause of seriously diminishing our peach growing, almost to the extent of prohibition. It would also seem the only course to pursue to regain our former success, is to root out all the old trees and plant anew with stones procured from sections of the country where the "Yellows" is unknown.

Thus, it will be observed that our starting-point in pomology is directly traced to the early settlers, who brought with them the love of fruit growing, and, although for nearly two centuries progress and advancement of pomology was comparatively slow, it was no less firmly rooted, and its rapid and continuous advancement spread over the whole country; the practice, the science, the art of pomology, had barely dawned in the beginning of the present century, and orchards were quite in contrast with the intelligent and judicious care they receive at the present day; the career of the pomologist was yet in its earliest stages, but his eye has been turned upward and onward—his labor unremitting.

No man in the beginning of the nineteenth century seemed, or even regarded himself, a true American of the higher type, who did not plant fruit trees, and, although it was after the war of the Revolution and after the war of 1812 before fine orchards and gardens became numerous, small-fruits began to receive cultivation in the gardens of the wealthy, and wild berries only were sold in the markets; we had just commenced to develop the resources of our great country, which embraces every clime and every variety of soil adapted to the cultivation of fruits, both indigenous and exotic.

Even this brief sketch of pomology in New England would be incomplete without some mention of the Societies, both Agricultural and Horticultural, together with the papers and periodicals treating of agriculture, stimulating the introduction of fruits, and treating of the better modes of cultivation; one of the earliest works published in New England, its title "Essays upon Field Husbandry," by Rev. Jared Elliot, of Killingworth, Conn., begun in 1747, but barely alluding to fruit culture. But Elliot introduced into Connecticut the White Mulberry, and wrote a treatise on the mulberry tree and silkworms.

"The New England Farmer," by Dr. Samuel Deane, was published in 1790. "The American Gardener" was published in Washington, D. C., in 1804. "The American Practical Gardener" was published in Baltimore, in 1819. A "Treatise on the Cultivation of Flowers," by Roland Green, was published in Boston, in 1828; and numerous other papers have aided and encouraged pomology.

The first efforts for promoting agriculture by societies was the formation of the "Philadelphia Society for Promoting Agriculture," in 1785; and "The Agricultural Society of South Carolina" was incorporated in 1795. The "Massachusetts Society for Promoting Agriculture" was incorporated in 1792. It was the pioneer of agricul-

tural societies in New England, and was very active in encouraging all interests pertaining to fruit growing in New England. "The Agricultural Repository" was published by this society, being the first of its kind in the State; a writer furnished a list of twelve peaches, six cherries, seven apples, and fifteen pears, being considered the most esteemed grown in the State at that time.

The "Roxbury Russet" was included in the list of apples. It probably had its origin in Roxbury, Mass. Soon after the settlement of the country the first settlers of Stonington, Conn., went from Roxbury in 1649, and tradition states, took this apple with them at a very early date. It is undoubtedly the oldest of the native sorts and has been widely disseminated over the northern portion of the country.

The "Baldwin," at that time, was but little known. The original tree stood in the town of Wilmington, Mass., and first fruited about the middle of the last century. It is now probably more extensively grown than any other apple in the New England States, and as a commercial apple for export outranks all other sorts.

We have, as briefly as possible, alluded to the cultivation of fruits as existing in New England previous to the war of 1812. After the termination of the war, fruit growing seemed to receive a boom. From England, France, and other European countries the best varieties were sought out and brought into New England; and with the ardor that new things receive here, orchards and gardens were planted with the best fruit then known, but much inferior to the choicer productions of our time, many being "to the manner born." I remember when the choicest apples found in our markets could be counted by less than a dozen sorts, and pears and peaches equally limited; when strawberries were gathered from the meadows and pastures. I have gathered bushels and sold them at fourpence-halfpenny per quart. I cannot learn that previous to 1824 strawberries were cultivated in gardens, but a little later were occasionally found in the markets.

I planted my first strawberry bed in the spring of 1836,—two sorts, the Alpine and Early Virginia. I believe the following year added the Metheun Castle, then a new English sort. In 1838 the Hovey Seedling was first shown at the Massachusetts Society, and in the words of the Committee, "promised well." I purchased two plants in 1840, at twenty-five cents each, and made money with my investment. Very soon after, numerous varieties seemed to spring up all over the country, and the cultivation of the strawberry was fairly established as a market industry. Hundreds of esteemed varieties

have been brought out, have lived their allotted time and passed away to make room for others still to come. From a limited garden industry, the cultivation of the strawberry has increased to thousands of acres, and the season of fruit from Florida to the Provinces is continued fully three months. It would seem, from observing the newer sorts from year to year, that the limit of perfection has been already reached, many of the new seedlings being inferior to some that have passed away; but a new seedling that promises well always enlists the warmest attention of growers, and it is soon put upon its merits; and when soil and cultivation are favorable very many have proved decided acquisitions. The Hovey, Wilson, Boston Pine, Scott's Seedling, La Constante, Brighton Pine, Jenny Lind, Triomphe de Gand, and four hundred others, have been esteemed varieties, but now are unknown, except by name.

The raspberry, following the strawberry, adds a favorite fruit for home use and the market. The best sorts are of foreign origin, or seedlings from them; they are proving even more desirable for cultivation. They are long-lived and seem almost perpetual. The older sorts remain as good as ever, and are only replaced by newer kinds that promise better in flavor, productiveness, hardiness and size of berry. They are not as extensively cultivated as the strawberry, but early in the century only wild raspberries were in use, indigenous and growing all over New England. The older sorts were the Antwerp, Herstine, Hornét, Northumberland, Kneivett's Giant, together with the Black Caps, which form a succession of berries until the blackberries are in season.

Blackberries, in early times, were growing wild, more especially on newly cleared land, and when once rooted were continued in pastures and on the roadsides. The wild sorts were both high bush and trailing; the trailing were the earlier and larger fruit. They were so abundant in earlier times that they were not much cultivated until within forty years. Since that period the cultivation of the blackberry has, and is now, largely increased. Many new seedlings have been brought out and widely disseminated, proving great acquisitions and well worthy of cultivation, affording a continuous season of small fruits until the grape becomes ripe.

The grapes found growing wild by the Puritans were quite distinct from European sorts. Within the last fifty years increased attention has been given to them in New England, and many hybrid varieties have been introduced through cross-fertilization. These are proving a wonderful success. It requires an early grape to succeed in New

England, and cultivators esteem earliness as one of the requisite features to ensure annual and well-ripened crops; and, while the vineyards are not a leading feature, a large area is devoted to its culture.

The pear, although found in very limited number early in the century, made but slow advances. The Seckel pear, according to Downing, was known in 1765. It was introduced to cultivation before 1817. The original tree, in 1848, was very large for a Seckel, being more than six feet in circumference at one foot from the ground. I saw the tree about the year 1863; it then showed evident signs of decay. It was the first native pear that attracted much attention and for many years was regarded as the standard of excellence.

Probably the first attempt in this country to produce a new fruit by cross-fertilization was by William Prince, who raised Prince's St. Germain, about 1806. Thus it would seem the pear, until within fifty years, received but little attention outside of gardens, and even then but few and inferior sorts. The first impetus given to its cultivation was about 1835, and the better sorts of foreign origin were introduced about this time. There was increasing interest manifest and many good kinds were imported. Horticultural societies, with their exhibitions and liberal offers of premiums, with the fondness of Americans for new and rare things, soon brought from abroad hundreds of varieties.

The sessions of the American Pomological Society brought together large collections at their exhibitions in Boston in 1873. Messrs. Elwanger & Barry contributed three hundred and seventeen finely grown varieties of pears. Marshall P. Wilder, the President of the Society, contributed four hundred and four varieties, comprising all the foreign and native varieties. Hovey & Co., of Boston, contributed three hundred and twenty-eight varieties, and F. & L. Clapp had eighty-six varieties of pears grown from seed. There were more than six thousand dishes of fruit, from all parts of the country, including Canada and Nova Scotia.

At this exhibition it would appear as if the pear cultivation had arrived at its height. Only nurserymen and those of great wealth and enthusiasm could attempt such displays. Soon after it was discovered that fewer kinds, comprising the choicer sorts, were more to be desired, and the weeding out process was in order. The great mass of poor and ordinary kinds were thrown out and their cultivation discontinued.

We have now arrived at a more healthy condition in pear culture. But few varieties are grown, and those that are found especially

adapted to the soil and climate of the grower; and, as a rule, they are not, when grown for market, found as remunerative as the apple, but afford an agreeable family and dessert fruit, well suited to a refined taste, and in season eight months in the year.

In the main, however, I believe the experience of the last forty years of pear cultivation in New England will not warrant large orchard industry, with the sole view of profit; the greater portion of our people are unaccustomed to use pears as freely as they use other fruits, and the supply is often found greater than the demand; its tendency often to rapid decay, is also against it.

By far the most important phase of pomology is the apple, and, without any hesitation, I will affirm the best fruit God has given to man.

Fortunately, New England lies within the great apple-growing belt, ranging from the Atlantic to the Rocky Mountains, and it is still more fortunate in the exquisite flavor of New England apples. I have never seen them equalled, and I believe I have travelled over this country from the St. Lawrence to the Gulf, to and from the Atlantic to the Pacific.

The soil and climate of New England is even more favorable to the production of the apple than of the pear, plum or peach.

During the past sixty years the apple has been more largely planted in orchards than all other fruits combined, and the supply for home use and export, from year to year, is enormous.

There have originated in New England many apples of the most approved varieties; they are largely grown here, and have disseminated over the whole country, Downing's Fruit Books recording over three thousand kinds of apples, fifty-five of which have their origin in Connecticut, more than eighty in Massachusetts, fifteen of these in Worcester County, and undoubtedly many more that have not found their place in printed works.

The other New England States have also contributed a large number that take a first rank throughout the country.

At the Exhibition of the Massachusetts Horticultural Society in 1829, apples were barely mentioned; and at the first Exhibition of the Worcester County Horticultural Society in 1840, but few apples were designated by name.

Since that period the apple has made most remarkable advance, its cultivation being stimulated by Agricultural and Horticultural Societies and State Boards of Agriculture in all the New England States.

Previous to the formation of these societies there were but few

orchards that were managed with much skill, and very many received but haphazard treatment.

As time went on, knowledge and science slowly crept in; every season brought out more improved cultivation and better products, and in a few years horticulture and pomology were recognized as the fine and higher arts in rural life and rural aptitude.

Equal progress has been made in inculcating an educated taste for choice fruits and creating a demand which encourages the cultivator to supply fruits which fill the markets with tempting displays from all parts of the country.

The thousands of acres of orchards and gardens which may now be seen in New England manifest the strangest contrast with that in former years, and for many years New England was in advance of other portions of the country in horticulture.

The natural conditions which govern our soil and climate require more skill and brain in its manipulation to ensure success. Special manures and fertilizers are found to be a necessity; the art of grafting and budding, with other approved modes of propagating, have to be acquired and made use of; judicious pruning is one of important practice in the orchard; and thinning the fruit, to promote size and good flavor, is equally necessary.

It would seem, if we may judge from the new fruits of the last fifty years, there is no barrier to obtaining by hybridization fruits of any desired size, quality or color, if the proper knowledge is used with a requisite amount of skill and patience, to produce almost any desired size or quality, together with fine aroma and brilliant coloring.

Science has revealed these possibilities, which only await the skilled cultivator to demonstrate in all the lines of fruit growing.

New England is also favored with a variety of soils which is found favorable to the growth of the apple. Experience also teaches that one kind of soil is not adapted to the growth of all kinds of apples; some thrive best in a loamy soil, some in sandy, others in a gravelly or clay; keeping those things in view, it is plain that several varieties of apples, when planted in a single orchard, are more reliable for a crop, as seasons come and go, than one variety.

Sometimes climatic conditions prove injurious to one or more varieties, when others in the orchard are uninjured.

In the earlier times, and even now, there were and are, many theories not well founded, relating to orcharding; of late years growers are changing their views, and the majority of orchardists endeavor to understand the reason of their practice; under these conditions

the march of progress has been rapid, and success is in proper ratio to the care the orchard receives.

I have, for some years, given more especial attention to the growing of apples than to other fruits.

In the autumn of 1843 I planted the apple-seeds from which the trees in my orchard of twenty acres are planted, budded the trees, and planted them, and have watched their progress of growth and bearing ever since. The trees are now at maturity and bear full crops, and I have received a vast amount of pleasure and a reasonable amount of profit from my husbandry.

When we look back upon the past century and notice the vast changes in pomological pursuits that have taken place; the rapid progress made in all its phases; the general diffusion of knowledge of fruit growing; the vast increase of gardens, vineyards and orchards within every State and Territory, from the Atlantic to the Pacific, unequalled in extent of acres, of capital invested, in any country in the world; the great variety in all classes grown; the general and rapid dissemination of valuable fruits, either old or new; and in looking at past and present progress, and draw upon the imagination to estimate future advancements, now that the principles that bring out, by cross-impregnation, new sorts so rapidly, and will continue in all time,—we feel we cannot correctly estimate the future; we know not where our successors will stand, or the perfection their knowledge, their culture in fruits will attain a hundred years hence. But if we may judge by the past, we can feel encouraged that the science of pomology will be upward and onward; new discoveries are sure to be made, new principles of cultivation will be brought out, and we cannot even conceive to what perfection in pomology our successors will achieve and develop.

But marvellous as the progress of the next century may be; however great may be the advancement; how much it may add to the beauty and charm of rural life, and men will repose amid the bloom and fruitage of the orchard and vineyard,—we may at least congratulate those of the present century who by their labors and zeal have contributed to this heritage, and given the advantage of the clear and steady light which will illume the future toward pomological perfection.

It has been my privilege to have personally known, and to have been associated with, some of the noted men who have been leaders of pomological interests for nearly a half-century; some of them have been instrumental in raising from seed, and introducing some of the

prominent fruits now known and cultivated; among these notable men are the Downings, Wilder, Warder, Barry, Downer, Bull, French, Hovey, Clapp, Manning, Moore, Kenrick, Prince, Buck, Hunnewell, Parkman, Sargent, Strong, Smith, Berckmans, Hyde and Gold, with many others who have and will leave enduring monuments of their good and noble work, which will continue from generation to generation.

I have alluded but briefly to the progress of Pomology in the past and present century,—to elaborate would extend this paper far beyond reasonable limit of time, and tax your patience in undue proportion to the information imparted.

Much as has been accomplished in Pomological industries, still greater achievements and accomplishments await those who may follow.

The yearly fruitage awaits generations of men for all time, and will ever be in just and due proportion with the intelligent labor bestowed.

24th January, A. D. 1895.

ESSAY

BY

HERBERT R. KINNEY, Worcester, Mass.

Theme:—Vegetable Gardening.

It being but two years since I had the pleasure of reading a paper before this Society on this subject, and at that time we looked at it in a general way, it may be as well to-day to consider some varieties of vegetables individually, and incidentally speak about some of the many things that are always coming up which make gardening one of the uncertain, if not the most uncertain, branches of agriculture.

During the past two years, which have been years of business depression throughout the country and which we have felt to a certain extent, we have also had two exceptionally dry summers; but for all that, as we look about us, we can see others that are getting along no better, in the many branches of industry that go to make up our generally very busy city and county. And while we, as gardeners, horticulturists and farmers, could wish for better business, we must remember that we should only expect a reasonable share of the good things that labor can provide, and our business gives many that some others are denied. We will not try to consider this matter now, but turn to the literal meaning of our subject.

I shall not try to follow any particular line in this paper, but take up some of the more common vegetables in a more or less general manner, and leave many loose ends for discussion later should you wish to spend more time on this subject.

In vegetable gardening, fertilization is one of the first subjects to be considered, and on very light or very heavy land it is desirable for us to have considerable vegetable matter. This vegetable matter or humus is quite necessary in most soils, and the easiest way those living near the city can get it when they wish to get a large part of their land under cultivation, is from stable manure: but where one has

land enough so that it is not necessary for him to have more than from one-third to one-half of his land under cultivation, there is then no trouble keeping his soil well supplied with vegetable matter without drawing heavily of manure; in which case it becomes desirable to ascertain the relative value of agricultural chemicals, mixed fertilizers and stable manure to see which will produce, not always the largest crop, but rather the one that is the most satisfactory, everything considered.

Quality, I am sorry to say, does not count for as much in our market as it should, not that we do not now have to grow as good vegetables as people wish to pay for, but most people buy by the eye, and many things that look very good are not of the best quality, and people after buying a poor thing a few times will decide that they don't care for it, and stop buying, which is not what we want. It is better to have a good sale at a reasonable profit, and that is a small one at this time, than to have a limited sale at a much larger profit.

Another thing that should be considered by the gardeners is some way to have the vegetables reach the consumer in better shape than they do at the present time. This is a point that we as vegetable growers are not apt to give as much time and attention as the matter deserves.

We are very liable to consider that when they are sold to the dealer and we have received our pay for them, that it makes no difference to us whether the dealer is able to sell them or the consumer able to eat them; but here we are making a mistake; we should not only try and put them up in such a manner that there should be the least possible loss to the dealer, but so that they should be in the best possible condition when they reach the consumer.

I will not at this time even suggest a remedy for the present careless handling of vegetables, but any of you who chance to be about a market, especially during warm weather, can see that there is need of better handling; and there is not a doubt but what it would be as much of a benefit to the growers as to any one.

When we come to look at this subject in the line of individual vegetables, varieties, methods of growing and handling, etc., it is rather difficult to decide just where to begin, and I shall not try to treat the subject, but just take up some of the standard varieties.

Of the whole list of vegetables there is not, perhaps, one of more importance to the gardener than lettuce. You may think differently, many of you, as there are many who only think of lettuce as a salad a few weeks during early summer; but when you consider that at the

present time lettuce is a standard vegetable all the year, and the large amount of capital that is invested in sash and houses largely for the growing of lettuce, you can see that it is a very important crop for the gardener. It is important on another account, as it is a crop that he can grow during the winter; and that is quite desirable for those who do not keep cattle, at any rate.

It seems to be the general impression at the present time that greenhouses are preferable to sash for the growing of lettuce during the winter; but as I have had no experience with them can not judge, but would say that we have had no trouble in growing very satisfactory lettuce under sash during the last three winters. It has always seemed to me as though there was more trouble in raising good plants than in growing the lettuce.

In running sash during cold weather we find it desirable to put in a few sash of heat at a time, and arrange so as to be able to put in a few sash in a bed as often as possible, as we cannot hold much heat during the short days in winter long enough to grow a good crop; but a few sash of fresh heat put in from time to time seems to help quite a long run; and while it is more trouble, you might say, perhaps, that trouble is what we are looking for when we try to raise lettuce during the winter; because it is not how many sash can a man look after, but how can he make a day's pay; and I would rather spend a day's time on two sash than four, providing we can get the same returns.

Our market is not a good one for winter lettuce; but if the time comes when we can raise good lettuce so that it can be sold for from 5 to 8 cents per head, during the winter, there is but little doubt but what the demand will increase. While the price is very high at present, there is no reason to expect another such a time for a number of years, during which time there will probably be considerable lettuce raised at a loss.

Fungus has begun to make its appearance in some places in such a manner as to cause uneasiness, and if the gardeners were to have their own way about it, we should know but little about its habits until it got so destructive as to threaten the industry, as they, the gardeners, are as a rule, non-believers in fungi; but I am thankful to be able to say that there are students studying these small plants, and we may hope, at least, that they will discover some method of holding them in check.

Lettuce delights in a rich, mellow soil worked deep, and does not need much water either in sash or outdoors when the weather is cool,

but as it becomes warmer it will use considerable. The only variety that is wanted in the market here, is the white seed tennis ball, or one of the strains of big Boston, during the winter.

When it comes to summer or outdoor lettuce there is probably nothing that gives as good satisfaction as the black seed tennis ball.

During the summer lettuce grows quite readily, but owing to its keeping so poorly, both in the field and in the market, it is not used very extensively; and then we have many summer vegetables that do not last long that call for our attention.

Cucumbers are another of the gardeners' standard early crops. They are mostly grown in beds and houses, when the weather becomes so warm the glass is no longer needed for growing lettuce, and as they require more heat than most vegetables, are a desirable crop to have under glass during hot weather. They will generally do fairly well in a lettuce-house in early spring, but it is generally considered that it is about as profitable, with sash particularly, not to start them until the weather gets warm. While the later ones do not sell so high there is generally a better crop.

When not troubled with disease they will continue to bear nice cucumbers a long time, but of late there has been much complaint, both here and in the eastern part of the State. There seems to be only one variety that is desirable to raise for market under glass here, and that is the white spine, some strains of which are very fine. They are also the standard variety for planting out in the field where slicers are wanted, but are not good for pickles, as they do not set so much fruit as some of the smaller varieties and are not so good shaped when small. The standard variety for pickles for this market is the Boston pickling, where the demand is mostly for small and medium pickles. Pickles do best if planted after the 20th of June, and are usually early enough if planted the first week in July.

Cabbage is another of our vegetables that we have most of the year, and that are in the market all the time. Early cabbage can well be called a garden vegetable, but the later ones are more of a farm crop. It is very probable that there are more cabbage raised and sold than of any other vegetable, potatoes excepted, and in many places they are considered a very profitable crop.

Early cabbage has always seemed to me to be, as one of our largest gardeners once told me they were with him, "The most uncertain crop I grow." When they do well they are a very nice crop to handle, as they are easy to keep free from weeds and leave the ground in fine condition for a late crop.

To get good early cabbage, it is very essential to have good plants, as their principal enemy is the maggot in the root, and strong plants will often get through when weak ones are destroyed. Club-foot is the disease that gives the growers of late cabbage much trouble, especially if they are on low ground.

The standard early varieties here are the Early Jersey Wakefield and Henderson's Early Summer. The Winningstadt is becoming a popular cabbage for summer and autumn, and while it may be a desirable cabbage for the dealer, I hardly think it profitable for the grower, as it is quite small. It has until quite recently sold for considerable more than the drumheads, and it ought to, but of late some of our large cabbage growers have been growing it quite extensively, and if it can be grown nearly as cheap as the drumheads, it will probably be the standard summer and fall cabbage. The Stone Mason is a standard winter cabbage and much better for this market than a larger variety. The best strains are round enough so they trim well during the winter. It is a good keeper.

Early cabbage thrive best in rich and not too moist old garden soil, that has not had any of the cabbage family grown on it for at least three years, while late ones enjoy nothing better than a good sward; but they are rank feeders and need heavy manuring. Cabbage grown on, or partially with, fertilizers and chemicals, will keep better than if grown exclusively on stable manure, and they will keep better if grown on sward than if grown on old land.

Cauliflowers are treated very much the same as cabbage and usually sell for more by the head, but the demand for them is very light in this market. They are one of the many vegetables that are not appreciated here.

Perhaps after cabbage there is no vegetable so important with the gardener as the beet. This is also a vegetable that we have practically the year around, although there are so many shipped here from the South during the early spring, that there is not so much demand for old beets late in the season as formerly. Some gardeners have done considerable of a business with transplanted beets, especially in southern New England; and while it does very well if they can be brought into market a few days earlier than those sown in the open field, it is usually hard to get them early enough so that they will clean up before there are a plenty from the open ground, when they will not begin to bring what they cost, and do not sell as well as those grown from seed sown in the open field. Beets will sometimes come nicely if sown when the ground is quite wet and cold, but are

generally more satisfactory if not planted until the ground is pretty well dried off.

It is quite important that beets that are intended for extra early should be well thinned, after which they need but little attention. The standard early beet for this section is the Egyptian, and it is a good beet early in the season, but soon becomes hard and of poor quality.

For a general purpose beet, there is probably none better than the Edmands; but that has most too heavy a top and is too much of a beet to be sold for the price they were last summer. They come at a time when the gardeners are not heavily loaded, and are a good vegetable, and perhaps we should consider that we are doing something for the poor. We certainly cannot be doing much for ourselves when we sell good bunch beets for from 20 to 25 cents per dozen. The best winter beets are grown when the seed is planted quite late. From the middle of June to the middle of July should grow them of good quality, and they keep better to be stored before very hard freezing.

The Egg Plant is a vegetable that, while there is very little demand for them in our market, are worthy of a better standing, as they make a very nice dish when well served, and are quite easily grown, but the people here have not got used to them yet. They are started and grown about the same as tomatoes.

There is hardly a vegetable that is more universally grown by both large and small gardeners than the tomato, and while the season of the fresh fruit is not a long one, it is very extensively used during its season. One of the reasons for its general use is that it is easily grown and usually gives a good crop. They are one of the vegetables that will grow on most any soil and are not generally subject to disease, although there are one or two diseases that are occasionally quite destructive to them. For a very early crop they may be set on dry land that is not rich and set quite close (2x3 ft.), but where the land is in good heart and moist, four or five feet apart each way will be close enough. There are three types of tomatoes extensively advertised, but only one in general cultivation here. They are represented by the Atlantic Prize for extra early, Acme and Perfection for general crop, and Ponderosa—very large. There are a good many varieties of each of those types, especially the Acme and Perfection, and there may be some improvements on them which were some of the first of this class.

Of all the late crops in the vegetable garden celery is king, and since

the general introduction of the self-blanching varieties, so-called, its season has been very much lengthened, as they can be had in good condition by the middle of August and are on the market much earlier; but celery does not come to its best quality until the weather becomes cool, and seldom is in prime much before Thanksgiving. The height of the season is from that time until after the first of January, when it begins to drop out of general use, and while the price generally advances there is apt to be much more waste.

Celery is generally considered a second crop, but on moist land, where it is difficult to put in a crop early in spring, it is becoming quite common to set Paris Golden or White Plume in rows from five to seven feet apart in June, and later set in Giant Pascal or Boston Market between. During the months of September and October the early is to be blanched with boards and taken out, and then the late celery banked; in theory this is one of the best methods of growing celery on moist ground, but I can say from experience and observation that it does not always work as well as we might wish. Celery is a very rank grower in cool weather if it has plenty of moisture, but does not do well generally on dry land unless artificially watered. It does best on land that has been in cultivation a number of years and that has been worked deep, and it seems to do well on the same land year after year.

The best celery is usually grown where the seed is sown where it is to grow, but as it germinates very slowly, is very small and grows slow for a long time after breaking ground and is very liable to burn off, it is generally as easy to start it in the bed, where the seed is generally sown about the first of April for the general crop; for very early it is put in a little earlier, but if planted too early it is liable to run to seed.

Plants set after the first of July will usually make the best celery to keep, as it is much less liable to disease and is much finer grained than what grows in warm weather. It can be used to follow any early crop and does nicely set between every other row of early cabbage if the cabbage are cleared away carefully and the ground thoroughly worked, but the land must be rich and in good condition or it will not be a satisfactory crop. I have had very good luck setting it after strawberries, but the land must be rich and thoroughly worked. I should not think of trying a crop of late celery without using fertilizer liberally. In fact, we seldom plant any crop without using fertilizer, and the more manure we use the more anxious we are to get a second

crop, and if a few bags of fertilizer will push the crop a few days earlier and make it of better quality, it pays well.

DISCUSSION.

Mr. S. H. Record. *Mr. President*,—I notice the essayist spoke of lettuce and the possibility of growing it so that it would be cheaper in the market than it has been. I would somewhat question that possibility after some seventeen or eighteen years' experience in growing it, from the fact that it costs some five or ten times as much to grow it under glass as to raise it under open culture; but we may have to sell it cheaper. When we do, we will diminish our greenhouses and diminish the crop growing; that has been practically the case this year. We have been adding greenhouse to greenhouse until this past year. While it was said by some of the market gardeners when they went to Arlington, they could hardly find a man at leisure to talk with them because they were so busy building so many greenhouses. This year they have hardly raised any lettuce. Ten years ago I made up my mind that the South would very soon knock us out on lettuce growing. During the last few years, however, we have not had much competition from the South. Down there they have grown it chiefly in Florida. Last winter when I was in Philadelphia, and also the winter before, there was a great amount of very fine lettuce shipped from Florida, and it was shipped in such quantities as to knock the price down so that it was hardly worth while to grow it under glass; and that has been discouraging some of our northern greenhouse growers. Mr. Budlong, who is one of the largest gardeners in New England, has five or six greenhouses, and two or three hotbeds besides, containing lettuce. He went to Florida about a year ago, and he said he came back as sick a man as he ever saw; and I felt just so myself when I went into market in Philadelphia, when I was there last winter. He said he was not going to build any more greenhouses. But you know near the very last of December we had a frost that destroyed all the oranges and lettuce in Florida. Now we began to ship to Philadelphia, and our first lettuce met the Florida lettuce there. One man had various vegetables valued at $45,000. He had $42,000 offered him on Friday for what he had in his garden; on Saturday he said he would have taken forty-five cents for the whole of it. Now we have letters from Philadelphia wanting us to send all the lettuce we can every week; they say even if it comes there Saturday, the day they generally don't like to have it come, they want it. Many of our greenhouses here have not nearly the

amount they generally have to supply the want, now that the Southern crop is cut off; but that is an exception here in New England.

In regard to the difficulty of growing it, I wanted to speak of one or two points which Professor Goessmann gave us here last week, that we have not always understood, on various fertilizers and conditions of the soil. There is great difficulty in growing lettuce by artificial heat at this season of the year; the days are so short and the nights so long that it is extremely difficult to grow it without its becoming diseased. There are various fungoid diseases, some of which we know and some we do not know, which will sometimes nearly ruin the crop after it is almost ready to ship.

Professor Goessmann explained to us, when the soil was lacking in potash, how we could tell it. That was the reason of the rotting of the lettuce at this time of the year.

Some are growing it by electricity; he thinks it is a benefit. I know that a plant will grow better under electric light than it will around the corner of a building where the light don't shine.

Mr. Budlong, one of the largest growers in New England, said, "You may perform the same operation as to planting, temperature, culture and watering and all that, and you never will get the same result twice alike in lettuce growing." One man told me after he had grown lettuce forty-five years that he thought it was only mere luck and chance, where he grew four crops a year he only got about one good crop once in four years. This is not showing a great deal of ability. In regard to other vegetables, I presume there are others who will have more to say.

Mr. Stevens, of Wellesley. *Mr. Chairman*,—I have been especially interested in the very practical essay of Mr. Kinney; I admire the ground he has taken in making quality the leading point. I am not much of a vegetable grower, devoting more of my time to small-fruits, but he has said several things of which I heartily approve. Among others, that on account of the intelligent criticism we meet in the market of New England, they require a first-class vegetable put up in first-class style. We must turn our attention, I think, in fruit culture, in flowers and in vegetables, to perfection in quality as well as size.

Mr. Kinney spoke of celery, the Prince of plants in the vegetable family, so wholesome, so nutritious and so desirable that I hope our tables will be supplied with it at every meal possible. He also spoke about the new fancy kinds, the beautiful foliage almost equal to flowers. My attention was once very strikingly called to that in a trip I

took to Canada. I went into a restaurant at Toronto, beside me sat two sons of the Emerald Isle; after giving my order I reached over and took a branch of the beautiful White Plume. One of them cried, "O Mike, Mike, watch the lad ateing the bouquet." Such a plant as that I think should be encouraged as much as possible.

I also find in the cauliflower another delicious plant. I have always loved Peter Henderson, who introduced the White Snowball cauliflower. If we grew a few less cabbages and a few more nice, early cauliflowers it would be more profit to the grower. Potatoes, tomatoes and squashes will always be in the market. We can improve in quality, size and color.

It is well that the seeds which are sent out by our congressmen can be sent to the experimental stations to be tested before they are put into the hands of the growers. I hope that this good work will go on; and from the hands of the persons who conduct the Worcester County Horticultural Society, one of the first in the land, we may hope for good fruits. May success attend their efforts.

Mr. Charles Greenwood. *Mr. President*,—I must certainly express my appreciation and pleasure for the paper that was read by Mr. Kinney. He has expressed my ideas very well in the general tone of his paper in regard to the varieties of the market. I notice one thing in his paper, one departure from his usual line, in regard to fertilizers. We all know what to expect from the Kinney family, the senior or the junior. They advocate the commercial fertilizers; but in the paper to-day I gleaned that they are not wholly given over to their exclusive use but recognize the value of the use of stable manure. In regard to that, it depends very much on the soil as to which shall be used. In my own case I find that stable manures are more satisfactory, and I shall probably use less of the commercial fertilizers this year than I have in any previous year. I shall, however, this year, use the special fertilizers for potatoes with no stable manure. But the majority of my soil being rather moist, it needs a mechanical action of the coarse manure to lighten the soil; and on such soil I don't think the application of the chemical would be at all satisfactory without vegetable matter, which the stable manure affords.

Question. Won't you tell us why you use more stable manure?

Because I think I can better afford to use that.

Question. Is it for cheapness or for quality?

I might say, for both, being as near the city as I am, it is better to have the team at work and drawing the manure at the price I can obtain it than pay out the money for the commercial fertilizer; but I am

satisfied that on the most of my soil it wouldn't give the best results. I know that with a liberal supply of stable manure I seldom fail to get a satisfactory crop.

Mr. Frank J. Kinney. *Mr. Chairman*,—I think Mr. Greenwood is getting old, the same as myself; that is a very broad statement he made. The older I get I believe the less I know. When I first began to talk before this Association I thought I knew something about growing vegetables, but now that I have heard so much, I begin to think that I don't know anything and never shall. Just as I think I have learned something about the working of the ground some one else steps in with his new ideas and entirely overturns mine.

I don't think I can add anything to the paper that you have heard and the remarks that have been made, unless it is that five years ago the fact appeared that it was a great deal cheaper to use special fertilizers than to pay the enormous prices which we had to pay for stable manure. Since we began on fertilizers we have had the advantage; I can better afford to haul from the city at $1.50 a load the same as I used to pay four and five dollars a load for. It makes a vast difference, and I am a little afraid that it will affect my neighbor on the right a good deal, as well as myself. I don't do it because I think it is better myself, but because I think it is cheaper. We must produce goods so that we can sell them cheaper, and still we must keep our quality up. There are lines of goods that we cannot sell in the winter, lettuce and other vegetables that are not eaten because people think that they cannot afford to buy them. Now we have got to learn to produce them cheaper. There is no doubt but what we can save a large per cent. on help if we are judicious. We can get better help. The help question has been the greatest drawback. I have often had my attention called to the fact that so very few have been brought up in the business. By the time that you have got a man so that he is good for anything, somebody else wants him and will pay him better. Now we have learned that we can take some classes of foreign help that will learn better and that will do better work than the American help that we have been fishing for. All we have got to do is to keep our eyes open. I would rather have one good Swede that will work at a good price, than to have any American man I ever saw.

Mr. David Fiske, of Grafton. Thank you, Mr. President! I don't think I can enlighten this company any in regard to raising vegetables. The more I do the less I know. I believe that my experience has generally agreed with the essayist as far as I know.

I never raised any lettuce under glass. I don't quite understand why there should be any wrangling about raising lettuce. I plant lettuce in the early spring, when the ground will work, and it grows. There is no trouble about its growing, I grow it just as easily as I grow grass. Now there is one thing that has not been touched upon, perhaps because it is not exactly a market-garden crop, and yet it is, and that is turnips. Now I have tried a great many times to raise early turnips, but have never succeeded in getting anything that is good for anything. Last year I had a piece of new ground that had not been ploughed up for forty years to my knowledge. I trimmed all of the trees that were there after I had ploughed it, and got quite a heap of brush on top of the furrows. I burned that over, which left a good heap of ashes; then I put on some phosphate and sowed some black turnip seed. The turnips came up and they grew, and I thought they were going to be good; but when we came to eat them they were not good for anything, they were as poor a lot as I ever raised, although I noticed that there were good early turnips in market. In regard to Rutabaga turnips, I have raised some that were first-rate. I planted them about the middle of July; they did not come up until after we had a good smart shower in August; they grew finely, and they cooked splendid. The year before, when we cooked them they were black inside and strong. I don't know enough to know why I have good ones this year and last year didn't have good ones. I raised them very largely on phosphate this year, and I did when I had black ones. I had, perhaps, a half-acre and I put on some privy manure and I don't know but what they were just as good and perhaps a little better there; they grew a little larger than anywhere else. I had a little bit of experience last year with cauliflowers. I have raised splendid ones. Last year I got some early plants and I set them out, and then I cultivated them. They began to head out pretty soon and they got a head as big as a silver dollar, and then they stopped. I don't understand it, so you see I don't know anything about raising cauliflowers. Onions is another crop that has not been touched upon; I have always until this year had good luck with onions. Last year I had a piece of old ground, and also a piece of new ground, side by side. I had fertilized the whole piece with stable manure, and I harrowed it in and ploughed it thoroughly, and I put on about a bushel of wood-ashes to the square rod, then I put on a pretty fair dressing of superphosphate, and then sowed onions, four kinds of beets, several kinds of carrots, lettuce, parsnips, etc. All the parsnips did splendidly, and the

onions came up pretty well, but for some reason they didn't grow, and then I got some nitrate of soda. I had an idea that that would hustle them. It generally does with crops; and I put it on the onions and took considerable pains to keep the weeds cut. I have found a good deal of trouble in regard to help. They most all of them want to let them alone until they can get a good strong hold. I find it almost impossible to get anyone who will go through a row of onions and leave it as it ought to be left. There will be weeds left. Well, I took care of these onions myself; but the onions didn't seem to grow as I thought they ought to, so I put on some more nitrate of soda and phosphate, and right beside them, the beets grew splendidly; but I never succeeded in getting the onions to any size. If anyone knows how to raise onions, I wish he would tell me.

Mr. F. J. Kinney. *Mr. President*,—This statement of Mr. Fiske reminds me of the trouble one of my city customers had last year. He had quite a little garden, so as to have something to do. I was going there every three or four weeks, and wondered why he didn't ask me to look at his garden; but as he was a very deaf man, I didn't think it worth my while to interfere. Well, it kept along until everything grew smaller and smaller, and one day he asked me to go into the garden. I went, and after looking around a little he asked me what to do to make the vegetables grow. Well, he had gone through about the same process as Mr. Fiske, only in addition, he had taken out everything that looked like a stone. Well, I says, "I should hate to tell you, my friend, but you have done everything except to give them a little water, and that is what they need." For the next three months he had streams of water running through them, and they grew beautifully.

Has Mr. Fiske anything to say about water?

Mr. Fiske. I didn't have any.

Mr. S. H. Record. I hope anybody here who intends to plant a garden, won't rely for a moment on any seed which you get from Washington. It may be good, and it may not. I often think of a remark our Secretary made once of a lady who was exhibiting flowers; she came to him and told him she had got some flower seeds from one of our Congressmen. She was very much elated to think that she was complimented enough to have some sent to her, and he did not understand, but after he had got it fully in his mind, he said, "Well, I hope you are not going to risk your reputation by planting them." It is the same about vegetables, if our President has ordered them to be tested at our experimental station then it will be all right to use

them, but I should advise every one to have them tested first. Just one word in regard to help,—Mr. Kinney said that the difficulty was, that the help didn't know anything; now I have found it just the opposite; they know it all. Nearly twenty years ago, I guess, my man was hauling manure here in the city, when a man stopped him and asked if he wanted to hire some help. He replied that he didn't, that he was a hired man himself. "Does your boss want to hire anybody?" "Why, yes, he wants to hire a man that can grow lettuce under glass." "Well, what is that?" "Well it is growing a plant they call lettuce under glass." "O yes," says he, "it is grown the same as anything else, I know all about it."

Mr. Wm. O'Connell. *Mr. President*,—I haven't got anything to say of value. I was just listening to see if I could pick up something to cure the diseases of those vegetables. I think it is about as interesting a lesson as we could learn from a meeting like this, to give us a remedy or some plan of action to do away with the diseases and the ravages of the bugs and worms that attack the vegetables. I presume all the market gardeners that know all about the secret like to keep it to themselves. And I would like to know what to do with cabbages that are club-footed or how to do away with the green worms, or how to do away with the maggot that attacks the onion. Now if any one will answer either of these three questions— Mr. Kinney. I will say right here, that a week from next Saturday, I am scheduled to read a paper on fungi. Now I am not prepared to say anything.

Mr. O'Connell. I would say that I raised onions for the last five or six years, and had very good success. I generally put them in as early as the ground is ready to work, and I put on stable manure. I get it all around the neighborhood and get it for taking it. I believe that stable manure is about as good as any that you get. Fertilizers I have tried of course, they are good to start up the crops early, but have a tendency on certain soil to make the soil heavy and damp. I had an experience with onions two or three years ago. The year before that, I had a little experience with parsnips. They were immense; in fact, they grew too long. I had some that were almost three feet long. I thought I would leave some in there until spring, and then dig them out fresh; but this year we had a good deal of snow on the ground, and there was no frost before the snow came. After a while the snow all went off, leaving the ground open and filled with moisture, and the consequence was, in the springtime the parsnips were all rotten. I ploughed up the ground and sowed onions where the parsnips were, and I had the finest onions I

ever saw. Some of them would weigh one pound. They were thick. I don't believe in thinning out onions too much, because they will push each other out of the ground. The ripest ones will come out of the ground first, and they will go to market first; and then the others will come in later, when you need them. My idea of telling you this is, that I think that the parsnips made a fertilizer that suited the onions. I hear a great deal about sowing clover; I suppose it is on the same principle, the rot goes into the ground and forms a fertilizer.

Mr. James Draper. I don't know as you want to hear from me. I don't know anything about vegetables; my friend, Mr. Hartshorn, here, can tell you a great deal more in that line than I can. However, I will take one moment. I don't think we want to encourage those onions of our friend O'Connell, that will weigh a pound. When we commence to work the scaling down of size, and scaling up of quality, I remember the indignation of our friend Goodwin, who hired a truckman to bring up a good load of enormous squashes, that all came from one vine. He expected enough money in prizes to pay the expense of bringing them, and he was very much provoked because I did not award them the prize. Also, our Mr. Pond, who brought in some spinach, one plant of which was large enough to fill a bushel basket, and he was very much surprised to think that we did not encourage that enormous growth. I believe that is one of the best things this Society has been doing, the scaling down size and requiring an exceptionally fine quality.

Mr. A. E. Hartshorn. *Mr. President*,—In regard to cabbage, if I could see any signs of disease, I would watch the plant and treat it with kerosene emulsion; that is the best remedy that I know of for cabbage.

Question. Kerosene emulsion with milk?

No; that I spoke of was mixed with water and sprayed onto the plant. That will almost always fix the green worms.

I would like to ask this brother who had trouble with club-foot, if he grew the cabbages two years successively on the same ground?

Mr. O'Connell. Yes, I did, and I had trouble with plants that grew on new ground. They grew club-footed during the season.

Did you raise your plants or did you buy them?

I bought some, and I raised some. I found both affected.

Mr. O'Connell. About the maggot in the onion. I always find they come up very good in the beginning, but when they are about five or six inches tall, the trouble begins. Now this is a disease that

is often fatal to onions, and I lose about half the crop; but, then, I generally have a very good crop, because I don't believe in thinning out until I see that all danger to the plants is out of the way. Now there seems to be a certain time of the year for this maggot to work which lasts about two or three weeks; after that time is past, the onion seems to grow all right. I see that some recommend letting an onion patch that the maggots will injure, rest two or three years. That is the only cure for it. The onion will grow on the same land every year better than any other crop. They seem to be better on the same land if not attacked by disease.

Mr. Watts. I suppose it is a well-known fact that cabbages cannot be grown on the same land, on stable manure, two years successively. Cabbage is a plant that, if it is planted on new land, will never be troubled with the maggot; it may, however, grow stump-rooted.

Now anyone who likes cabbages will surely like Brussels Sprouts, and how much better it would be to grow fewer cabbages and more Brussels Sprouts. They are delicious and go far ahead of cabbages; in fact, they will do better than cabbages.

Question. You mean if you get good Brussels Sprouts?

I don't ever have any trouble in getting good ones. I certainly should grow Brussels Sprouts in preference to cauliflower. I only raise a little cauliflower for pickles.

Now I would like to move a vote of thanks to the essayist, Mr. Kinney.

Chairman. It is moved that the Society give a vote of thanks to Mr. Kinney.

Mr. Fiske. *Mr. President*,—As long as the question of club-footed cabbages is up for consideration, I can say I have had a little experience in this line. I set out to raise some very early cabbage, and I got early plants and set them on a piece of ground that was ploughed the August before, and it was mellow and in good condition. We put on quite a large amount of stable manure and set out the plants sometime in April. They grew finely, then after awhile they looked wilted, and I found that they were getting stump-footed. I happened to see in a newspaper that soft soap poured around the roots would save the plant, and I got a few gallons of soft soap; I put, perhaps, a teacupful of soft soap around the roots, and then covered it with dirt, and whether the cause of the stump-root had got through working, or whether the soft soap saved the plant, I don't know,

but the biggest part of them brightened up and grew, and were a splendid success.

Question. What was the quality of the cabbage?

They were good cabbages, they sold well, that is the test.

Speaking about big onions, Brother Draper thinks he don't really like the big onions. Now he would be pleased with my onions. They had more quality than size.

The Chair announced that the next meeting, on Jan. 31st, would be addressed by Mrs. A. E. Henderson.

31st January, A. D. 1895.

ESSAY

BY

MRS. A. E. HENDERSON, WORCESTER, MASS.

*Theme:—Incidents of Foreign Travel.**

WHILE our fair land is wrapped in the white blanket of winter, and our rivers are silent beneath their icy sheets, let us turn our faces southward to a land of perpetual fruit and flowers.

Amid a world of waters, the beautiful island of Barbadoes appears, green with the growing sugar-cane and dotted with windmills.

How lovely it appears to our eyes which so long have looked upon ice and snow! We sweep into the harbor of Bridgetown and anchor amid a fleet of whaling-ships which chance to be lying here. Immediately we are surrounded by small boats, whose black occupants clamber on board in such numbers that I retreat into the cabin and gaze through the windows, astonished at such audacity. When ordered to leave by the officers, they express their determination to remain. There being ten to one of the crew, it was useless to make any disturbance with them. Each one was clamorous for the chance of carrying some one ashore in his boat. As in the case of certain advertisements for help, the supply was more than equal to the demand. We were told afterwards that they actually drowned one poor passenger. He wished to go on shore and got into one of their boats, but another boatman claimed him and pulled him into his boat, and still another claimed him, until the poor man lost his life. Before I went to Barbadoes, I was a strong abolitionist, but I found myself wavering somewhat when the black natives took possession of our floating home, and disregarded all authority. Finally the harbor-police boat appeared in sight, together with the crew from one of the whale-ships, and we got rid of our unpleasant visitors.

It is only the newly arrived ship that is troubled with them. Barbadoes is one of the most important of the British possessions in the

* A. D. 1869—70.

West Indies. It is twenty miles in length by twelve in breadth. The population is very dense, there being as many inhabitants in proportion to its size as there are in China. The blacks fairly swarm. The island is sometimes visited by hurricanes. Some years ago it was swept by one of these terrible storms in which thousands of the inhabitants lost their lives, and a vast amount of property was destroyed. Barbadoes may be called a sugar island, it being almost exclusively devoted to the cultivation of that article, large quantities being annually exported.

We visited several fine plantations and were much interested in the process of sugar-making. The cane is cut from the field with huge knives as we cut corn-stalks. It is then taken to the mill, where the juice is extracted and the boiling process is commenced. It is boiled in large iron basins, and from the skimmings of the syrup West India rum is manufactured. After being boiled sufficiently and cooled, it is shovelled into hogsheads having holes bored in the bottom, through which the molasses drains into an enormous cistern beneath the unboarded flooring. When the molasses is all drained, I have seen half a dozen negroes going from one hogshead to another tramping the sugar with their bare feet. Recently a machine for packing the sugar has been invented. The natives are very fond of chewing the sugar-cane before it is crushed; you can buy it anywhere in the markets.

Sugar is one of the most unpleasant cargoes on board ship on account of the steam which arises in the hold. It sometimes turns the white paint in the cabin a grayish color.

Trinidad is a large island situated on the northern coast of South America near the Orinoco River. It is nearly as large as Porto Rico. The same animals are found here that are found on the mainland of South America. We entered the Grand-boca of the Gulf of Paria, where we passed an English man-of-war which returned our salute, making a pretty picture as she steered between the wooded islands which formed the mouth of the gulf. We beat up the gulf and anchored off Port of Spain, the capital of the island.

Here we heard, for the first time, of the famous Asphalt Lake, which is reached from the Port of La Brea. This lake of pitch is considered the greatest curiosity in the West Indies. It is unlike any other lake in the world; for you can walk upon its surface, although from a distance it resembles water. The atmosphere is very unpleasant and people who are obliged to live near it are troubled with ague.

We were invited to dine at the consul's home. His sons were fine

musicians and were Protestants, the same as their father, while the daughters and their mother attended the Catholic Church. After spending a delightful evening we walked to the beach, where we found our boat waiting to convey us to our floating home. Every dip of the oar sent up golden showers of phosphorus, and when we arrived on board the whole ocean was sparkling with every movement of the waves; a phenomenon which is frequently seen in the tropics. The singing which floated over the water from a man-of-war made the scene more enchanting. It seemed as light as day, and I brought a Bible on deck and read a verse without any difficulty, although the print was fine. There are fine museums here which contain specimens of the native birds with their wonderfully brilliant plumage. The public gardens contain every kind of tree which grows in the tropics. I was greatly interested in viewing the wonderful variety. The clove tree, with the ground covered with cloves, which were of a red color before they dried, was a wonder to me. I had never thought before how they grew, and picked one or two bunches to preserve as a curiosity. The tree is quite tall, with dark green leaves. The nutmeg tree is very beautiful. I picked up the nutmegs from the ground, which was covered with them. They are covered with a dark, brown shell, outside of which is the mace. Then comes a covering like our walnuts, which they sometimes preserve. The tea has a small white blossom with yellow centre. The cinnamon tree we robbed of a specimen of the outside bark; the inner bark is what we use for spice.

The tamarind tree with its long, brown pods containing the refreshing acid fruit; the vanilla vine with its clusters of vanilla pods; the pepper vine; the guava fruit; the pomegranate; shaddock; and countless varieties which we had never seen or heard of,—greeted us on every hand.

At Point Icaque we took on board our cargo of cocoanuts. The surf is very high here all of the time. We rowed as near the shore as we could and were then carried through the surf by the natives to avoid being wet.

We can look through the glass and see the mainland of South America, from whence small boats come around us laden with various articles for sale. We bought some parrots and a macaw, which is a large bird of most beautiful plumage. The jigger is very plentiful here and one must be careful about going with bare feet. We were invited to dine with the owner of the cocoanut plantation. Before I left the table I was made very uncomfortable by a peculiar sensation

in my foot. After dinner I remarked to the planter's wife that something was the matter with my foot and I could not stand it any longer. She invited me into her room, and upon examination exclaimed, "You have a jigger in your foot, a bad one," and very dexterously cut it out with a penknife, much to my relief. There are miles of cocoanut trees here. The plantation we visited contained a grove of 12,000 trees. They grow to a height of fifty or sixty feet. The leaves are fifteen feet long, shaped like a fern; two leaves are shed annually. They droop gracefully from the top of the trunk, the nuts being in a cluster at the base of the leaves. The natives go up like monkeys and slash off the nuts with a knife. The cocoanut palm thrives well near the salt water. The nut is a great traveller, and finding a resting-place on some reef with only a little moisture, germinates and grows into a graceful tree, affording food, utensils and numberless aids to man. The nut, before it is ripe, is nearly all milk; and the natives never think of eating it when hardened, as we have them here. They drink the milk and eat the soft nut with a spoon. They use cocoanut oil made from the hardened nut.

Dominica is said to be the loftiest of the Antilles. Some of the mountains are volcanic, sometimes discharging burning sulphur. The springs possess medicinal virtues; some are hot enough to boil an egg. Rosewood is common in the forests. Honey and wax are abundant. Roseau is the capital. We entered Prince Rupert's Bay, and anchored off Portsmouth, where we procured a quantity of yams and bananas. The yam is a good substitute for the Irish potato. When the paring is taken off it is white. We found it very palatable, prepared like mashed potato. It is not sweet as many imagine. The tubers are of enormous size, weighing several pounds each. The song says "The yam will grow." I don't think there is anything in the potato family that can beat it in size.

The next morning, after we had anchored in the bay, a boat came alongside containing two boys who had run away from a whale-ship; they begged us to take them home, but before we could make any arrangement with the poor fellows the police-boat hove in sight and they were taken back to the whale-ship. They had had enough of the romance they had read about in dime novels, but they must finish the term of service for which they enlisted.

The island of Haiti presents a beautiful picture. It is a range of mountains rising from the sea. The smoke curling upwards here and there, which we noticed as we drew nearer, was caused by the burning of brush by the natives. The meaning of the word is the land of

high hills. It is separated from Porto Rico by the Mona Passage. The mountains are between nine and ten thousand feet high. It was here that slavery was first introduced on this continent. For nearly a century they have had their freedom, but they have utterly failed to demonstrate to the world their capability to govern themselves. They are fast relapsing into barbarism. We were told that cannibalism was actually practiced in the interior of the island; a fact which we could readily believe. Darwin must have travelled in this island when he became convinced of the origin of his ancestors. The monkeys had a more civilized look than some of the native Haytians. It is said that they are less civilized than the blacks of Central Africa. The white man here cannot own any land except through his black wife. They cannot vote or hold office. In Jacmel, the richest merchant's wife was as black as the stove. Some of his children were white and some were black. It was wonderful to see how carelessly the native women would walk along with a large tray of cakes and fruit upon their heads. They would also carry kegs of water. We walked into the country and saw them half-clad, standing in a shallow stream, thrashing the garments upon rocks, which speedily wears them out; so that one must be well supplied with linen when travelling where washing is done in this primitive fashion. The little children were playing by the wayside untrammelled by the useless article of clothing.

The black men will do anything to get rid of work; lie, steal or live upon the earnings of the women. Our custom-house officer was a black man; and, in the absence of the captain, he stole one hundred and fifty dollars in gold from a desk in the state-room, which was carelessly left unlocked. It was useless to look after him, as he left the place; and with such a princely sum for that climate, where little clothing is needed and where nature has provided abundance to eat, he could live in luxury for a long time.

Nature has done everything for this island. The luxuriance of the tropical vegetation is something that cannot be comprehended by one who has not seen it. The laborer is repaid with three harvests a year. The tall trees are filled with blossoms of every variety and color. Those which are not flowering trees are a support for various climbing plants, which unfold their fragrant blossoms to adorn the tree. In a land so full of bloom the wild honey is abundant. This is truly a land flowing with milk and honey. The bad government, however, keeps the white man with his enterprise from its doors.

The beautiful oleander, with its huge bunches of rose-colored blossoms, claimed our admiration, and carried us back to childhood days,

when we admired the oleander in the window-garden and listened to the following story: "When Hero's lover was washed ashore by the waves she buried him under an oleander tree, where she was accustomed to sit and mourn. A traveller chancing to pass was attracted by the rare beauty of the flowers, and inquired the name. Hero was so absorbed with her grief that she could only repeat, 'O, Leander! O, Leander!' The traveller, thinking she had told him the name of the flower, wrote it down in his note-book."

The firefly is very brilliant. I could read by its light, moving it along beneath each line. I was told that the natives use them for lanterns.

The Rio de la Plata, or silver river, is the widest river in the world. At Montevideo the width is sixty-two miles. At Buenos Ayres ships can now lay alongside the wharves to discharge cargo. Formerly they anchored several miles from the city, and were at the mercy of the dreadful pampero winds, which occasionally sweep across the treeless plains. The seasons here are just the opposite of ours,—June 21st being the shortest day and December 21st the longest. The climate is very fine and the winters mild. The streets are laid out regularly. You can take a street-car, or tramway as it is called there, and soon reach the plains, which stretch away for miles and miles, where the cattle roam wild. The half-civilized life of the cattlemen causes them to consider one who cannot throw the lasso over the horns of a wild animal as effeminate. In the city you find cultivated people of all classes from Europe and North America. We attended church and found a large congregation of people from North America.

We visited the museum, and were greatly interested in the various animals which inhabit the forests of South America. There was an enormous boa-constrictor, stuffed and festooned on one side of the hall. It was as large round as a water pail, and I did not find it hard to believe that they could swallow an ox. I should rather not meet one alive. We took on board a cargo of hides and wool, and half a dozen live sheep for food. A few years ago the cholera broke out in Buenos Ayres and created a panic. The dead bodies were carted off in cart-loads, and sprinkled with lime and burned. In Mendoza, one-half of the inhabitants were wiped out by cholera. Rosario, on the Parana River, suffered terribly. There is no better climate anywhere; but the sewage of so large a city was in a dreadful condition, and Buenos Ayres had to learn a lesson.

The island of Cuba is 660 miles long. It is the "Queen of the Antilles," and furnishes one-fifth part of the world's sugar. The

Havana lottery is conducted by the government and infatuates all classes, from the poor washerwoman to the millionaire. I was told of a colored man who drew a large fortune and suddenly found himself surrounded by a myriad of friends who were all anxious to assist him in spending it. His habits became most aristocratic, and his money and friends melted away as quickly as they came. The hotel-keeper's wife in Matanzas told me that she drew five thousand dollars.

The rainy season lasts from May to November. It pours so hard that you cannot listen to conversation. During the hurricane season the islanders sometimes have frightful experiences. A lady who was in Matanzas during one of these storms, told me that the water rushed over the city at such a rate that the people who were caught out were washed down to the harbor. Ropes were stretched, which some caught and were saved; others were rescued by the ships whose anchors held, and many perished. While Matanzas was flooded, all the water was swept out of the bay of Cardenas. The staunchest ships afloat are sometimes left high and dry upon the shore; the houses are upset; trees are uprooted, and general destruction prevails.

While in Matanzas we rode in a volante, which is a kind of chaise, with very heavy and high wheels and long shafts. One horse is between the shafts, another is hitched to the left side. It is a very comfortable carriage in which to travel over the rough roads of Cuba. As you walk along the streets, you can look into the rooms and see the ladies engaged with their fancy work, etc. They have no need of glass windows to keep out the cold, but have shutters or blinds which are closed at night.

In Sagua la Grande the town is a little distant from the wharf, and the captains were obliged to take the train back and forth. They always rode in the first-class car, while the American Consul took the third-class. One of the captains asked him why he rode in the third-class car. "I ride in the third-class car," he replied, "because there is no fourth-class." One could not but admire such independence. Our government does not provide a very liberal allowance for some of its consuls, and they are obliged to practice the most rigid economy and get what they can from travellers. West India rum is so plentiful here that the sailors are always begging to go on shore. One evening two were granted permission to go. Sometime during the night, we were aroused by the news that the two were overboard; in trying to get on board they had both fallen into the water. All hands turned out to rescue them, and soon I heard them tossed upon deck like logs of wood. Those two did not go on shore again.

Those who have enjoyed the delightful experience of a visit to the tropics appreciate the educational value of time spent there. "The tropics are nature," says James Rodway, who has interpreted the individuality of trees, and found them to be as sensitive as human beings and resembling them in many ways. Each tree struggles for existence among the crowd, selfishly pushing aside others in reaching upwards towards the sunlight, and crowding its roots amid myriads of tangles in search of food and water. Here in the tropics we see the survival of the fittest, the stronger trees crowding out the weaker. We have not been accustomed to look upon trees as individuals, but to the observer in the tropics the resemblance is perfect, and we can understand our Park Commissioner's affection for trees. They are to him as companions; they cannot talk, but there are human beings who are mute. The investigator can find sermons in stones. If we study them, we will find friends in trees. The South American forests contain hundreds of species, unlike our forests, which contain a small variety. The pineapple, that most refreshing of tropical fruits, grows wild in the northern parts of South America. From the fibres of the leaves cloth is manufactured. The cassava bread is extensively used in hot countries. The poisonous substance of the root is extracted by heating, and thin flat cakes are made, and are much esteemed by the natives. We purchased some of the bread and also of the root.

It is not a very delightful experience to sail through the Straits of Gibraltar in the night-time, with the wind blowing a gale and raining hard. All hands were on deck and on the alert, as we worked our way through the portals of the Mediterranean. We entered the straits at midnight. At three o'clock, the rock loomed up before us with its light on Europa Point. As day dawned we found ourselves in the blue Mediterranean, where we gazed upon the snow-covered mountains of Spain, which we were rapidly leaving behind. The next day we passed Algiers Bay and Cape de Gata, on the north coast of Africa. That night we experienced severe thunder and lightning with hail, and passed the Balearés Islands, which are five in number, Majorca being the largest. The northern part consists of lofty mountains.

We passed Sardinia, Maritimo, Sicily, and entered Malta channel, where we looked through the glass at the celebrated fortress of Malta. La Valetta, the capital, has been called the most beautiful small city in the world. When opposite Greece, our topgallant-mast was carried away, a frequent occurrence in the Mediterranean. The crew were six hours clearing away the wreckage.

Off the island of Candia, or Crete, we were driven by a gale directly towards the shore, and were powerless to change our course. Such times as these you envy those ships that are propelled by steam. I was quite seasick at the time, but dressed myself and children, and remained in the cabin awaiting our fate. Everybody on board had a serious look; and the captain was consulting the chart to find the best place to steer on shore, when the wind changed and, with deep gratitude, we bade adieu to the island of Candia. It is one of the largest islands in the Mediterranean, 140 miles long and 30 miles in its widest part. It is mostly mountainous, excepting in its eastern part. The capital is a walled city. When opposite the Nile, we saw a tree which had floated down the river.

Cyprus is a large island in the eastern part of the Mediterranean, nearly opposite Syria. It was once of great importance, but is now in a neglected condition. Leaving Cyprus behind, the next land which met our gaze was the coast of Syria, off Tyre, where we were delayed by a calm, which lasted all day.

The next morning, we came in sight of the mountains of Lebanon, and looked at the village of Sidon through the glass. In the middle of December we entered the harbor of Beirut, after a voyage of sixty-three days from New York. A pilot, dressed in Turkish costume, was taken on board. We anchored very near the town, which is the principal seaport in the Holy Land. The captain went on shore, and, when he returned, brought a basket of oranges which were grown in Syria.

My curiosity was excited by the peculiar dress of the pilot, and I asked him how the women were dressed. He replied, that all the women he saw were wrapped in white sheets. I was provoked at such an answer, but found, upon going ashore myself, that he had spoken truly. We find all the good things in Beirut,—oranges, figs, dates, almonds, English walnuts. In fact, nearly everything you can mention is to be found in the stores. Partridges and such wild game were very large and fine; mutton was also abundant.

Large quantities of Mulberry trees are seen, which proclaim that you are in a silk country. The harbors of Syria are mostly unsafe when the wind blows from certain quarters. In bad weather we are in danger of being driven on the rocks, and are obliged to weigh anchor and drop into St. George's Bay for protection. When the wind blew from the desert, my face felt burned while I remained on deck. We drove on the Damascus road to the foot of Mount Lebanon, and saw the orange trees heavily laden with green and golden

fruit. The date palms are very graceful, and the fig trees are common. It is quite an experience to eat a ripe fig taken from the tree. When they are fully ripe, they burst open, showing the seeds; they are sickish sweet, and I much prefer them when dried. The olive tree is very plentiful in all parts of Syria. The oil is used extensively in cooking and for various purposes. The color of the tree is a light green, similar to the willow. We passed camels heavily laden with stone, and a caravan of gypsy-looking carts carrying produce to Damascus.

We were invited to the home of our consignee, the wealthiest merchant in Beirut. The residence was palatial, the ceilings very high and the floors of mosaic marble.

The furniture was covered with silk from Damascus. I was admitted to the apartments of the merchant's wife. She was smoking a nargileh and ordered the servant to bring one to me. I thanked her very kindly; but there was as much tobacco in the cup when I finished smoking as there was when I began. Those who are accustomed to smoke, enjoy these water-bottles very much. We were taken to ride in the merchant's carriage, a magnificent affair from America. The houses are built of stone, with flat roofs, where the families gather in the evening, and smoke their cigarettes and nargileh, and sleep beneath the awnings. The streets are narrow, and arched in some parts of the city. The fences are of prickly pear or cactus, which bears a red fruit.

We invited the merchant's two sons on board to dine with us. When they sat up to the table I was much distressed to notice that they did not remove their hats, or fez as they call them, so I very politely invited them to do so. They informed me that a Turk never removes his hat while eating. I felt more comfortable after hearing that.

The young men were very highly educated, and were very agreeable and entertaining. They could converse in several different languages, but as Bayard Taylor remarks, in describing a Turk who fascinated him by the noble elegance of his manner, "In any country but the Orient, I should have pronounced him incapable of an unworthy thought; here he may be exactly the reverse." It is not thought necessary to educate the young ladies. When the father of a family is absent from home, he addresses his letters to his oldest son, instead of his wife.

Bidding adieu to Beirut, we sailed up the coast, where we looked upon the snow-covered mountains of Lebanon and many small

villages until we cast anchor in Tripoli. The bay is nearly seven miles long and bends in circularly. The town is situated at its southern end, at the foot of some high lands at a little distance from the sea.

Before we were allowed to land, the pilot whom we took from Beirut, held our bill of health for the health officer to read; finding it all right, he shook hands with us and welcomed us on shore. The streets were very narrow. The houses were built of stone, with flat roofs, the same as those of Beirut. We went into the merchant's office who was to furnish us with a cargo of wool. He hunted round and found one old chair, which was kept as a curiosity, and passed it to me to sit upon.

The American consul was a native of the place who had been converted to Christianity, thereby suffering much persecution from his family. We walked outside of the gates of the city, where we found donkeys and their guides waiting for customers. My husband was trying to persuade me to take a ride; but being unused to riding as the Turkish ladies do, I was rather loath to accept of his invitation. Just then a gentleman rode up to the gate and, seeing that we were foreigners, introduced himself as Mr. Lowery, an American missionary, and said he should be glad to be of any assistance to us. I dislike very much to hear our missionaries spoken slightingly of, as they sometimes are by travellers. I have very pleasant recollections of missionaries and their families whom I have met in foreign lands, and when I see a convert to Christianity like Antonio Tunis, the American Consul at Tripoli, I feel that we cannot give them too much credit for the noble work they are doing in lighting up these dark places in the remote parts of the earth. Women, in particular, should be interested in missionary work. If they could travel in these countries and see how little their sex is regarded, they would think America a paradise for women, as a celebrated traveller has called it. What makes America the paradise for women? I need not tell you that it is Christianity. Everywhere in the East we are followed by beggars. Many of them have children which they carry upon their shoulder, with the child's arm around their neck. In Beirut, while waiting at one of the stores where my husband transacted business, an old beggar woman came along soliciting alms. One of the clerks, to amuse us, knocked over the old woman and held her down by the neck, all in a playful manner; but it spoke louder than any lecturer could speak of how the Turks "reverence and respect women."

As we walked along the streets of Tripoli, every gentleman who had met my husband, would embrace him and kiss him upon each cheek. I expected my turn would come next, but I found that women were of no account whatever in this part of the world.

Here the Mohammedan religion prevails. The Koran takes the place of our Bible. Long pilgrimages are made to Mecca, the birthplace of the prophet. Many die from the fatigue which they undergo on the journey, and those who return wear a badge of distinction. Before they start on the pilgrimage, they settle up their affairs in case they do not return. We visited one of their houses of worship. The vestibule was filled with shoes; long rows of worshippers were bowing and prostrating themselves flat on the floor, all in perfect unison, while the leader repeated the prayer aloud. There are no seats of any kind. The floor is covered with mats or carpets. Some of these mosques are very beautiful, and are very numerous in all the large cities. The Orientals are devoted to their religion, and pray several times each day, with their faces always towards Mecca.

We were invited to the consul's house to dine. He asked Mr. Lowery what he could do to entertain us. He told him he thought a variety of the native dishes of the country would be a novel feature of the dinner. So we had all manner of mixtures set before us, many of which one would have to acquire a liking for. We also had an abundance of food which we could appreciate. The consul's residence was some distance from the port, so I was obliged to ride on a donkey, in the Turkish fashion; but not having on the Turkish dress, I presented a most ludicrous appearance. About half-way we met a company of boys walking towards the port. They laughed loud and long at my riding-dress. When we returned on board ship, we found that the boys had been examining our floating home; as the American flag was rarely seen in that harbor, as the anchorage is by no means safe, and the winds often tempestuous. We walked to a beach and gathered some shells, which were a foot deep for a long distance. We scooped up as many as we wished with our hands. The surf rolled on the beach several feet high on a calm day. In a gale it must have been something awful to behold. Our merchant invited me to call upon his wife. The room was furnished with mats and divans. The lady could not speak English and I was unable to speak Arabic, so we gazed at each other and smiled, sadly lamenting our inability to converse. She presented me with a sponge attached to a rock, which had been brought up from the bottom of the Mediterranean by divers.

To enjoy travelling in Syria, it is important that one should be familiar with the Bible. I know that I never before read it with such meaning as I did when my eyes beheld the places and customs of which it speaks. I saw the humble inhabitant dwelling beneath his own vine and fig tree, with his children growing like young olive plants around him.

In sailing past St. Paul's bay, where Paul's ship was wrecked and the crew were all safely landed upon the island, it was doubly interesting to have read of how Paul gathered a few sticks to put on the fire, when a viper was warmed up and fell on his hand. I could imagine that he gathered sticks; for there is no wood on the island, the fuel being brought from Sicily in ships.

Bidding adieu to the unsafe harbor of Tripoli we enjoyed sailing up the coast, and in a short time anchored in the Bay of Iskanderun or Alexandretta. This was once a place of considerable trade, being the port of Aleppo, but it is now in ruins. It has the best anchorage on the coast. The bay extends about 40 miles in a northeasterly direction and is 17 miles broad. We counted 150 camels coming in, laden with produce, from the interior. While crossing the desert the camels go without water for several days at a time, having drank enough before starting to last them. The driver carries fresh water in a skin bag taken from an animal, and when it has evaporated, as it sometimes does. he has been obliged to kill the camel in order to save his own life, by drinking the water found in the camel's stomach. Water is scented by the camel long before the driver is aware of its being near. These "ships of the desert" carry heavy burdens, weighing from 600 to 1000 pounds. They can travel 35 miles a day. There are caravansaries where man and beast can find accommodations for the night, but they must carry their own provision.

During Ramazan, the Turkish fast, which lasts about a month, the Mohammedans are not allowed to eat, drink or smoke from sunrise to sunset. It was very hard on the workmen who were putting on board cargo. But they make up during the night and endeavor to eat enough to last through the day. The rich reverse the order of things, and get around the fast by sleeping all day and feasting during the night.

We enjoyed walking on the beach at this place, gathering the beautiful, variegated stones, which we brought home and gave to our friends to use as paper-weights. The cones from the pine tree are valued for the seeds, which are highly esteemed, when sugared, as confectionery.

While lying in the Bay of Iskanderun, a Russian steamer arrived.

Henry M. Stanley and Mr. Taylor, the American Consul from Cairo, Egypt, were on board. It was so rough in the bay that the passengers could not land. Mr. Stanley and the Consul, seeing an American ship in port, ran the risk of capsizing, and made us a visit. There was an old gentleman from Baltimore, engaged in writing a book on his travels, among the passengers; but he did not dare to risk himself in a boat when the harbor was so rough. If a balloon had landed on deck I should not have been more surprised than I was to find that a boat was alongside in such a sea. Mr. Stanley had just visited the American colony, the members of which had been deluded to leave their native land and settle in Jaffa; and he entertained us with a description of the forlorn condition of the remnant of the colony which he found there. Most of them had found their way back to America, sadder but wiser people.

Mr. Stanley was on his way to the dark continent to discover Livingston. He was then a young man, full of energy and daring, quite a contrast to the prematurely old and gray-headed man whom I heard lecture in Mechanics Hall a few years ago. The African fever and explorations in an enervating, tropical climate had told upon his iron constitution.

When our distinguished visitors returned on board the steamer, the old gentleman they had told us about came on deck and cheered and waved his hat, like a schoolboy, when he saw our beautiful stars and stripes which were flung to the breeze from the mast-head to honor our countrymen on board the Russian steamer.

> "Ah! when the wanderer, lonely—friendless,
> In foreign harbors shall behold
> That flag unrolled
> 'T will be as a friendly hand
> Stretched out from his native land,
> Filling his heart with memories sweet and endless."

The longest day I ever experienced was when I was in quarantine. We came in to New York without a bill of health; and although there was no sickness on board when the Doctor examined us, or no one sick during the voyage, a law had been passed that we must show a clean bill of health. Failing to do so, we were sent to the quarantine ground for twenty-four hours, and went through all the purification process just the same as though we had yellow fever on board. After the voyage is completed, how one longs to set foot on shore, and meet familiar faces once again, only those who have been quarantined can appreciate.

7th February, A. D. 1895.

ESSAYS

BY

PRACTICAL CULTIVATORS.

Theme:—Practical Talks on Floriculture.

O. B. Hadwen. The hour for which this meeting is called having arrived, I will ask you to come to order. The subject this afternoon is, Practical Talks on Floriculture: a subject which interests most everyone.

There is nothing more beautiful, nothing that can embellish our homes, and our gardens, and our farms, so well as the display of flowers. The interest has grown in late years far beyond what we originally expected, so that now you can scarcely pass a single house in the town or country, without seeing a display of flowers in the windows, in the woods, or in the fields. Perhaps there is nothing that gives more pleasure to all, than a good display.

I am one who believes that the people who get the most out of life have a fondness for flowers. Farmers can grow them. Everyone can grow them, especially ladies; they know more about flowers than men.

I know that sometimes when I go down to Boston and get something entirely new, and bring it home and plant it out, and then when I get it nicely to going, I will ask my wife to come to look at it, and she will say, "O yes, my mother had that more than fifty years ago;" so old things become new.

But the chair don't propose to take up the time of the audience, so I will call upon Mr. Blake of Rochdale.

WINDOW PLANTS.

Fred. A. Blake. A few words to beginners on the culture of window plants. Two of the principal reasons of failure suggest their own remedy, viz.: Dry atmosphere of rooms, over- and under-water-

ing. Other causes of failure are: Watering with very cold water in the hottest part of the day, instead of at night or early morning when the roots are nearer the temperature of the water.

Miscellaneous collection of plants, natives of torrid and frigid zones, in same window, under same conditions, which reminds one of the Irish woman who complained to her landlord that the water had risen so high in her cellar that it had drowned her hens. He replied, "An' why didn't yer kape ducks." The moral of this is: Select plants suitable for the position in which you are obliged to grow them. Both pond lilies and portulaccas will not flourish in the same tub.

It is natural for the flower lover to covet every variety of plant he sees; but if he wishes for success, he will consult some competent florist, explaining to him the conditions under which the plants will have to be grown, and let him select such varieties as are best suited to those conditions. Thereby he will save time, money and serious disappointment.

Among the best plants that may be selected for the average window, I would prefer some of the varieties of fibrous and tuberous begonias, for winter and summer respectively. By their proper use, we may keep our windows beautiful the year round; and they have one great advantage,—so far as I am aware, there is no insect foe yet discovered that troubles them.

With the pots about one-third full of suitable drainage material there will be no danger of over-watering, unless it may be from leaving water standing on the crowns of the tubers in the tuberous section, which would cause the shoots to rot off.

Of the fibrous section, I will mention as a few desirable varieties:

Thurstonii, one of the best for beauty, both of foliage and of flower.

Semperflorens Gigantea Rosea, a continuous bloomer and most beautiful. Then

Rubra and Metallica.

Vernon, which anyone can easily raise from seed, is always covered with bloom, even when only an inch or two high, and is a very desirable plant indoors or out.

Alba Picta, pretty, ornamental foliage and good flowers.

Argentea Guttata, beautiful foliage.

Manicata, Aurea, large glossy leaves blotched with creamy white. Delicate blush-white flowers on long stems.

Pictaviensis, leaves bronzy green on face, underside rich purplish red, large clusters of rosy-white flowers.

Diadema Robusta, grand variegated foliage.

Otto Hacker (new), fine foliage and bloom.

Wettsteinii (also new), fine ornamental foliage, flowers similar to Rubra, but lighter color.

With these, a few of the Rex varieties might be desirable, though the air in most living-rooms is unsuitable for them on account of its extreme dryness, which for human as well as plant life should be obviated.

Of the Tuberous section, unless one has a large amount of money to spare, one will find the mixed Tubers about as good as the named varieties, and they cost much less. The best way of all, however, is to grow them from seed, starting in January, or even in December, so as to have plants in bloom from early summer till fall.

For one who has never tried it before, it is quite difficult to start the seed; but it is really very easy after you know how. I will not take your time to explain, but can tell you all I know about it in a very few minutes in reply to any personal requests.

I have named only a few of the many beautiful and desirable varieties of Begonias; but with these, and one or two suitable Palms and perhaps an Azalea, say the beautiful Veitchii Grandiflora, one may have a window that will be a joy the year round.

Mr. Watts, as requested, will give us something in relation to flowers.

They asked me to give you, this afternoon, my experience in growing Gladiolus. They think we understand it as well as anything else. You are well aware that the Gladiolus makes as fine a show in our gardens as any flower. Then it is a very showy flower, and is a lasting and useful flower; for when it is necessary that we should use any for making decorations there is not a flower that is its peer. In the little talk, which I am to give you, I will show the way we propagate the Gladiolus. (Here he cut the bulbs into eyes). Now, they take that eye and cut it out; but when you cut it, it is not exactly as the potato. You have to be very careful to cut off a portion of the rim that is close to that eye; for the simple reason that all the roots which form are around there, and that starts the new bulbs to grow. The bulbs that have flowered will never flower any more. The bulb that you plant does not flower, because it flowered last year; but by cutting the eyes out like that, these little bits will grow, but they will not make flowering bulbs this year. But next year will. In starting with the seed, of course they grow little bulbs. Late in the second year, after the sowing of the seed, if you have good success, they will come into flower. There is only one bulb the second year, like this one in my

hand. The choicer kinds will have a tendency to grow like that. They don't increase rapidly like the poor ones. One bulb so planted will produce three. Now at the foot of these little bulbs, there are a lot of little ones like them; they are what we call bulblets, and will produce other bulbs true to its variety every time. I am asked a great many times doesn't the Gladiolus run back? I will say right here, they don't run back? They come true to the variety of those planted every time, and the reason that people suppose they run back, is because the good one only produces one and the poor ones produce five or six. The good one is liable to die. I never knew any poor ones to die, if we are anxious to propagate a variety. These little bulblets are covered with a very hard shell. You take it and split it with a knife, and peel it off. That makes it grow twice the size that it would if you had planted it as it naturally grew on the side of the bulb. Some bulbs when planted only produce one bulb, but they are liable to have three or four and sometimes a whole handful. A poor one will increase a great deal more rapidly than the good one.

I have jotted down here a few names of varieties that I know are desirable. I will say right here that anyone wishing to grow Gladiolus will do well to take some of the named kinds; for you know what you are growing and can reasonably expect to receive good results. When you grow mixed varieties, of course they make a fine show; but if you ever want to gain any desired point, you are not capable of doing it. Now I will start and run through a few of the best varieties.

Addison's, it is a very dark one and always comes good.

Aurora, this is another fine one that always comes good. It is a bright salmon.

Baroness Burdette Coutts, this is one of the finest. It is a choice shade of lilac. Anyone wishing to grow a good flower, there is no Gladiolus that takes its place.

Camelian, this is another very attractive flower; it comes very close on the spike.

Conqurant, this is an immense spike; it is very large and is a dark crimson with a white centre. It is a very fine thing.

Crupsele, is a light one, and has a very small bulb; the flower that it bears is equal to the one that the *Baroness Burdette Coutts* bears.

Flamingo, is a very large, striking, magnificent flower, and is a bright scarlet.

La Candeur, is a white one with a stripe through the centre of the lower petal.

Drap D'Or, is a dark lemon; but when I say lemon, there is a

great variation in the light and dark ones; but it is the only color that we could actually call them.

Meyerbeer, is a scarlet one, and is one of the oldest ones we have. It has a fine spike, and is one of the most attractive ones that we have.

Norma, is another good one.

Pacto, is an early one; it is a light lemon and is a very fine flower, and one that always comes good. I never saw a poor one.

Brennus, is another very fine flower which always comes good; it is very showy and is a very dark slate with a white throat.

Shakespeare, is a light one, and one of the best of the light varieties. Anyone wishing to grow light, that is the one to grow.

Snow-white, is as white as anything we have. With me it is not a good grower; I have seen some pretty fair stalks of it, but I have never succeeded in growing any myself.

Those I have named are of the Hybrids of Gandavensis. Now comes the Hybrids of Lemoines. They are advertised as being a hardy kind. They are perhaps hardy, but they have got to be under such favorable circumstances that the ground won't freeze down to the bulb. I have left them out-doors on purpose to test this thing. I know they have been planted in places where they stayed for years, but the frost never went over three or four inches into the ground, never far enough to reach the bulbs.

Lafayette is a very desirable one.

Rochambeau and *Gumbleton* are both good ones.

All these flowers you must remember come in the shades of purple and yellow. It is one of the distinguishing features of them.

Within the last few years they have introduced a new hybrid. It is called the Hybrid of Nancianum. I have not grown those. I have seen them grown considerable. They are very large flowers; the color is very striking, but there are very few flowers open at the same time on the spike. If you wish to buy a spike of Gladiolus, you want one that has five, or six, or a dozen flowers in bloom at a time.

Question. I would like to ask if Gladiolus don't go back, why it is we don't see some of the kinds we used to see as distinct now as they were in former years.

Answer. You do. The African, at my house, is just as distinct as I ever saw. It is a very hard bulb to propagate. When I say that they don't degenerate, I have never yet seen any bulb that I planted degenerate. They do die out; for often I see lots that I grew years ago, and which I know I have never done anything to, to dis-

place, that I have not got now. And, then, there are lots of kinds that I used to have that I don't possess now. It is an indisputable fact, that the class that is now being grown is a great deal superior to the class grown ten years ago.

Question. Have we any better than the *Eugene Scribe?*

Answer. *Eugene Scribe* is one that I intended to mention; it is one of the finest; it is just as good to-day as it ever was.

We must all remember and not feel disappointed, that when you come to an exhibition of Gladiolus, and see so many fine flowers there, and you say that you can't grow them like that, that the one that grows hundreds and thousands has a large crop to pick them from. Those that grow but one or two dozen have only a few to choose from.

Question. Will you tell us how to grow Gladiolus?

Answer. I have already run over my time.

Question. Well, I think the members will allow you a little more. I think they would like to know about the soil; as to what soil is best adapted to it; how deep to plant; the time of the season for them to blossom; what time to take the bulbs up; and how they are kept through the winter. Now, there are some questions to answer.

Answer. Now, to start with the cultivation. The best land that we have ever found to grow them on, is partially moist, sandy loam; it doesn't want to be wet, but it wants to be moist, and it wants to be land that has been worked one or two years. I would use as a fertilizer either stable manure, or bone-dust, or one of the fertilizers that is on the market. Either is good, of course the bone-dust or fertilizer is better for anyone that is only growing a small quantity. To plant the bulbs we run a horse-hoe through the soil, digging a furrow four to five inches deep. Then, if we use commercial fertilizers, we strew them along into that trench and then scratch a little dirt over it, and then one fellow takes a brush and stirs it up and that mixes the manure through the soil. We don't use any stakes; the Gladiolus grow up and they have to stand on their own bottoms, and if they don't do that they get pulled up.

We dig the bulbs in the fall, as soon as the leaves commence to turn yellow, along the last of October to the first of November; but I think we shall begin to dig about the first of October after this. This year we had a snow-storm come on the last of October and that very much discommoded us, yet it didn't discourage me. I thought that would all go away in a day or two, but we were very sorry to see that it came and stayed; thus my advice will be to begin to dig the Gladiolus pretty

early, soon after the first of October. There is one thing, if the Gladiolus is planted correctly, it will take a great deal of freezing before the bulbs are damaged, because they are four inches under the soil; and in the early fall it has got to be very hard freezing that will freeze down four inches in depth. But I will say that though we dug as rapidly as we could, before we could get them all dug, that cold freezing weather went so deep into the ground that the bulbs were perfectly encased in the soil. Part of them were hurt and part of them were not. First, we dig them all up and lay them on the ground, then with a knife cut off the tops about an inch from the bulbs; then put them into the boxes. If we have more than we have room for, we put them into barrels, and put them into the cellar. We have at the present time some barrels in the cellar that have not been handled. Now, anyone who has only a few to handle, the best way is to dig them up and keep the tops on. They will dry perfectly. After they get thoroughly dry, we take them and take the old bulb off from the new ones, and then they are clean, and ready for sale or to be planted next spring.

Question. Well, you have described how to get the soil ready, and how to spread the fertilizers through it, but I don't think you told us how deep to plant them?

Answer. Four inches.

Question. I don't get the idea?

Answer. We get a trench four inches in depth, and plant them there.

Question. How close in the row?

Answer. Well, at our house the boy takes a pail and he goes along and strews them in the trench so that they will be anywhere from one on top of another to a few inches apart; but if anyone wishes to do this scientifically, I suppose the prescribed rule would be to plant them about six inches apart. But we get just exactly as good flowers when they are put in some on top of the others and some two or three inches apart. We plant them very thick, for if you plant them too far apart they take up too much room. I will say one thing: we make our furrows about thirty inches apart, so that there is thirty inches between the rows. We do it all by horse power, only just the weeding in the rows; that is done by hand, so as not to injure the plants. Does that cover the questions?

Answer. It covers all mine.

Now are there any other questions any one would like to ask? I will say one thing; along the last few years the display of Gladiolus

at our Hall has not been so liberal as it used to be. I don't know why it is. I don't see why any lover of flowers should forego the pleasure of having a few Gladiolus.

Question. How long does it take those little bulblets to flower?

Answer. It will take three years. The first year of their growth, you get a little bulb as large as a pea; but the bulb, as that is now, will grow right on the top of that little one that is inside, and it will be just about as large as what that is. Next year that will make a good reasonable growth. My seeds will make bulbs from the size of a good Marrow pea up to the size of a walnut. I don't know but what they would keep on growing all the time. I have never tried it; but I think I will go home and sow some seeds to see if they will grow continually and keep growing and come into flower.

Mr. Draper. By planting them as thick as he suggests, so many stalks together will be self-supporting. I have very clear recollections of the way J. M. Earle used to plant Gladiolus. I happened to be at his place one time when he was laying out a bed. He was a very methodical man. He had laid out his bed the length of his garden and four to five feet wide, made it very rich and raked it over; and then he had that marked out as regular as the squares on a checker-board, so that every bulb would be planted six or eight inches apart. Then he would place his Gladiolus where those cross squares would intersect each other, and six inches in depth. Thus they were planted so many inches apart each way and just so many inches deep. They were very symmetrical.

One thing about Gladiolus; there is no flower that will keep so long in the house as that will. There is no flower that will produce a better effect.

Mr. Watts. I would like to say I have tried this thing and proved that so much labor is perfectly useless. You had better put them in as I have put them in, and take a chair and sit down and watch them grow.

I will show you that all the labor of our friend Earle and the way he put them in is perfectly useless and amounts to nothing.

There, now, he has taken a good deal of pains to put them in perfectly upright, and put them down just six inches. Now this eye on top dies, this one here below is going to grow; but it is not going to come up straight, it is going to start right up here. Now he has lost his line of symmetry. If he is going to put a stake there, he can do it easily enough. I used to do as everybody else did. I used the stakes to keep the Gladiolus straight, but now I have abandoned that and put down strong stakes, about three in the length of this room,

and run a wire from stake to stake, through the centre of the rows; and then as they came up,—the wire was eighteen inches or two feet from the ground,—we would tie the Gladiolus to that.

Mr. Pond. I have grown Cannas a great deal, and I think I always have good luck with them. This winter I asked Mr. Hixon if he wouldn't take my bulbs, and he took them and kept them, and this spring he informed me that he had lost them. I think I have discovered a way to keep my bulbs: I put them into my boiler-room and there I got them thoroughly dry. I examine them occasionally and they look as if they would come through nicely.

In preparing the ground, I take a piece about twelve feet across, in a circle, and put in about four barrels of night soil; then in about three weeks I set out my Cannas and water them every night, and keep the water on them about as freely as Mr. Hixon does on his Sweet Peas. I don't know but what I grow them about as large as anyone. I think I showed Mr. Hixon my Cannas, and he can judge if he ever saw any much larger. My Sweet Peas, I just dig a trench and dig it down about six inches deep, and then take a spade and go down about six inches more and loosen it up, and then I fill it up most full of either some night soil or what comes out of a cesspool, and then I work it together. I intend to do that in the fall. As to picking, I am very particular; one portion I pick one day and another the next; if I see a bud I pick it off. Keep them picked as close as possible if you want a good many flowers.

And my roses; I have a large variety of very fine ones. I have one bed twenty feet square. I make it as rich as possible, and last spring I put on some of that which came out of the cesspool; I think I put eight barrels into that bed, and then I put on some manure. In the spring, at the proper time, I cut them down to about a foot from the ground, perhaps a little lower, and I have roses from June to November.

Mr. Draper. Our friend Pond must have a monopoly of Pond's extract.

There is a great deal of complaint from those that grow house plants in the winter season. Some ladies make their plants look well all through the winter, and others have their plants look tired and discouraged. I wish friend Blake would tell us how to get rid of the insects.

Mr. Blake. *Mr. Chairman*,—I don't know what the best way is to grow plants. For the best plant on all occasions I recommend the Begonia. These are only a few varieties that I happened to have in bloom, but they are always in bloom. The best way to have a window

full of flowers is to have some Begonias. There is such a variety of foliage. I can't imagine a better window than one full of Begonias. If you get Geraniums and Petunias, most of them being summer bloomers, you don't have good success. Now with the Begonia you don't have any trouble with insects. As to getting rid of insects, it is utterly impossible.

Question. Is the Begonia sensitive to gas?

Answer. I don't think it is. It is the only plant that is satisfactory for the house grower. They won't stand a great many degrees below freezing.

Mr. Hadwen. I want to speak for the Helianthus, which is the sunflower. I have taken quite a little pains the last few years to get a collection. It has quite a large flower, and is very effective outdoors. I believe I have some sixteen varieties, some of which will grow as tall as this room. Some of them have perhaps a thousand blossoms, and as they are so tall they make a beautiful ornament for the garden. I have been very much pleased with my experiment.

Then there are the peonies in various varieties. There is none that surpasses the old-fashioned red one. I have a little plot at my home which I have set out solid with one kind (that is the old-fashioned red kind), and there is nothing in my grounds that equals it. The foliage lasts all summer after the bloom is gone, and is really an ornament in itself. They are growing in favor. They need rich land, as all flowers do.

One of the most exquisite flowers that we have is the Anemone Japonica from Japan. It is very handsome, with white petals and a yellow centre. It is not liable to be injured by insects, gives a fine autumn bloom, and seems to flourish in all soils.

Then there are the Rhododendrons, which are growing in favor. We used to think they were not hardy, but now we have a great many kinds that will stand the most severe climate.

Then there is our common Mountain Laurel; it looks beautiful in the fields, and until lately we have let it stay there. Still, when it is cultivated, it seems to be a favorite. I think that they don't want too much shade. They don't want to be planted under trees that sap up all the moisture. They will repay a little care in their cultivation. Anyone can take them up and plant them, and they will feel that their care and time are amply repaid.

14th February, A. D. 1895.

ESSAY

BY

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Theme :—Trees of Worcester and Vicinity.

IN these modern days of amplification and extension in every department of learning, and especially in that of science, when the good old fences that used to define so exactly the fields of knowledge, that in a fourteen weeks' course we could learn all there was to know on any subject, have all been thrown down, the possibilities of human attainment have come to seem almost boundless. Stimulating as this is to the imagination, it is a little discouraging to the average individual, who finds it impossible to keep up with the results even, that are being attained by those who are working in special lines. Only the teacher of a country high school in some very remote district pretends to an acquaintance with astronomy, botany, chemistry, geology, zoölogy and the various other "ologies" that his course of study requires him to teach; and even he would not claim to have a very comprehensive or exhaustive knowledge of any one of these great subjects. The genuine scientific man in these days is a specialist; he gives his days and nights to investigation and study, not only of a single subject, but often of a small subdivision only of that subject; witness the case of the enthusiast who devoted his whole lifetime to a study of the crayfishes of South America. This tendency to specialization, or rather this necessity for specialization, is well shown in the modern scientific literature. The titles of the books show their limited range. The latest book on Ornithology, for example, "The Bird's Calendar," by H. E. Parkhurst, treats of the birds actually seen month by month in Central Park, New York. Another recent one is called, "The Hawks and Owls of the United

States in Their Relation to Agriculture." There is a kind of fashion just now of taking some restricted locality and making a study of its plant life or its animal life, its rocks or its soils.

It looks then as if we must all be either specialists or smatterers: you may contend that a specialist is necessarily narrow, but I know it is one of your horticultural axioms that a small field well cultivated will yield a better harvest than a large area which one has neither the time nor strength to attend to in any proper manner. Since we are forced to decide between these two alternatives, it seems to me the part of wisdom, out of the great number of possible interests, to "choose the one that we love best"; and having chosen, to give to that what small portion of our time and strength remains, after the "getting and spending" in which we "lay waste our powers."

If I were asked what subject of out-door study a dweller in a city could most profitably and easily pursue, I should answer unhesitatingly The Trees! We Americans are reproached with not knowing the names even of the trees that grow in the streets through which we walk every day, and I think you will agree with me that the reproach is not unjust. Curiously enough, these splendid representatives of the plant world are not so generally known as the smaller and less striking forms. Persons of considerable botanical knowledge, who may be said to be on terms of intimacy with the common wild flowers and somewhat familiar with even the rarer species, have hardly a speaking acquaintance with the trees. That is, while they may know a maple from an oak, and an elm from a horse-chestnut, they do not distinguish the different species of maples and of oaks, nor know that the horse-chestnut is not as native to our soil as the elm. This ignorance is partly due to the fact that in the ordinary text-books of descriptive botany, the parts of the trees described are mainly the flowers and their organs, which are difficult to get at, generally inconspicuous and always short-lived. In later Manuals, such as Apgar's "Trees of the Northern United States," and Newhall's "Trees of North-eastern America," attention is directed to some of the more permanent characteristics, such as leaves, bark, wood, fruit, &c.; and the species are identified by means of these. With the help of the very ingenious key which accompanies each of these books, there is no reason why a person with no previous training, should not be able to identify all the trees to be found in our locality. But there is some time and labor involved in getting specimens and comparing them with printed descriptions, and some exercise of discrimination and judgment in deciding whether the two

correspond so closely as to make identification absolutely certain; and there are many of us who would like to know something of the trees about us, who have neither the time nor the inclination for the kind of work this involves. For the benefit mainly of such persons, a kind of tree directory has been invented, and the evolution of such a book is an interesting example of the specializing tendency I have just mentioned. The French botanist Michaux, who did so much work on our Flora, first published his North American Silva, which he called "A Description of the Forest Trees of the United States, Canada and Nova Scotia," in the year 1819. A good deal of ground he had to cover. In 1846, agreeably to an order of the legislature, George B. Emerson wrote his Report on the Trees and Shrubs growing naturally in the Forests of Massachusetts, a less ambitious work in its scope, but more thoroughly done. In 1891, John Robinson, of Salem, wrote a detailed account of the trees growing in the streets and gardens of his own city, accompanying his descriptions with exact locations. If he had wanted any exclusive right in this invention of his, Mr. Robinson should have had it patented; for it was followed in 1892, by Prof. Humphrey's "Amherst Trees," in which the author claims to describe and locate all the trees growing within a radius of a mile of the post-office in Amherst. Last year a similar account of the trees of Worcester appeared, and I know of at least one other New England city, Augusta, Maine, whose trees are being inventoried in a like manner. Let us consider for a minute the convenience of such a guide to those interested in studying the trees. You all appreciate the ease with which you are able to find anybody by means of your city directory. If you want Thomas Smith, and don't know where he lives, you consult the bulky volume of Messrs. Drew and Allis, and find immediately his street and number. Suppose it is the Norway maple you want to make the acquaintance of and you don't know where it is to be found. If your tree directory is at hand you can find with equal readiness where it is at home. If this isn't levelling this particular hill of knowledge, it is at least putting an electric railway to the top and making the ascent possible without effort. Perhaps you read that, at 772 Main Street, there is a well-grown specimen of your maple; the next time your business or your pleasure takes you in that direction, your acquaintance with it will at least be inaugurated, to be continued in future meetings; and in the case of many trees, if you are found worthy, to ripen into friendship and even intimacy. And how much pleasure is added to our restricted city lives by these friendships! A walk over brick

pavements has little that is ideal about it; most of us would choose a country road instead. But if we have eyes to see, there is beauty and ever-varying interest over our heads; for few of our thoroughfares are destitute of trees. Pleasant Street, for example, has little to recommend it but its trees. I don't believe a stranger would be greatly impressed by its width or its architectural beauty; but looking up the street toward the west, its vista of arching elms, especially if there is a background of sunset sky, is one of the loveliest sights our city can show. What a barren waste Front Street would be if it were not for the fine trees that have been preserved on the Common; and what an irreparable loss Main Street suffered when its splendid old elms had to go! To a real lover of trees they are equally beautiful and interesting at all seasons of the year, and we do not properly know them unless we can recognize them as quickly and as easily in winter as in spring or summer. On some accounts winter is the most favorable time to observe them, for then the distinctive habit of each, which is disguised by the foliage in summer, may be seen at a glance; the bark is more beautiful and more clearly shown, the character of the spray, the markings on the twigs, the size and position of the buds, are all features by which we are enabled to distinguish the different species as readily as we do when they are clothed in their summer attire. Spring, the season of unfolding buds, is a very busy time for the tree-lover; from the blossoming of the white maple, the last of March, to the flowering of the chestnut, the last of June, he must be on the alert, or some beautiful but transitory stage in the development of leaf or flower in some one of his favorites will have escaped him. What has been called the "misty season" of the trees, when the unfolding leaves gives them the appearance at a little distance of being enveloped in a soft haze, is a very short but very precious time. We appreciate, in some measure, the gorgeous spectacle presented by our trees in the fall; but how many of us know that the new leaves of spring are colored as beautifully, and in many cases as brilliantly, as those of autumn? Most of us have eyes for the blossoms of the red maple covering the bare twigs like coral; but we are blind to that infinitely prettier sight, a rock maple in full bloom. We look with approval on a horse-chestnut tree decked out with its showy flowers, but the blossoms of the oak are entirely unnoticed by us. The opening leaf-buds of the hickory, the half-grown leaves of the oak, the flowers of the birch,—all these and many other beauties are displayed for the most part before unseeing eyes. Anything that succeeds in awakening an interest in the trees is

a boon, whether it be from a scientific standpoint or from a practical, whether it go no deeper than a desire to know the name of each merely or to collect a leaf from each; for it makes us look at them, which cannot fail to result in greatly increased enjoyment of them—and enjoyment, it seems to me, is the highest end of all instruction and all training.

With all the trees in our public parks and private collections this city furnishes an excellent arboretum for the student. Compare our opportunities in this respect with those in Salem. John Robinson, in commenting upon the "Trees of Worcester" in a letter to the author, says, "We have in Salem no public parks where trees may be seen and studied." But with all our riches in this regard, one assistance that might well be furnished the student is lacking,—our trees have no labels. To anyone interested in learning them what a help it would be if there were any place where named specimens could be seen! If, in Elm Park for instance, where may be found an example of nearly every one of our trees, there were a generous supply of labels, such as may be seen on the trees in the Boston Public Gardens, the collection would be not only much more interesting, but much more valuable. I wish "the divinity that shapes our ends" in this matter—the Parks-Commission—might be brought to realize the importance of doing for the public what one member of the Commission has done for his private grounds, and devote some small part of the annual appropriation made by the city to letting its citizens know what kind of trees they have.

A somewhat careful enumeration of the trees growing here gives us a total of one hundred and sixty-one distinct species, and it is quite possible that some have been omitted from this list. Of these one hundred and sixty-one species, fifty-six are strictly indigenous to our soil, and consequently have the strongest claim on our attention and regard. Of the remainder, thirty-five have been brought from other parts of the United States, and we have seventy foreigners. With so large a list as we have to choose from of trees that have proven their adaptability to our soil and climate, it is a pity that the planters of trees, here and elsewhere, during the last generation, have experimented so largely with foreign species. Our own maples and spruces, our beech and our pine, have been passed by and the corresponding European species planted; in many cases an inferior tree to our own and always at a disadvantage here because of new and trying conditions. The very general planting of the Lombardy poplar during the early part of the present century was the most colossal mistake of this kind that we have made; but those wisest in the matter consider our

present wholesale adoption of the Norway spruce,—not only more planted here than any other evergreen, but more than all others put together,—a mistake similar in kind and hardly less in degree. Not only does the fact that a tree is an exotic give it great value in the eyes of many, but if in addition to that it shows some abnormal characteristics in foliage, or habit of growth, it becomes almost irresistible. For example: it being natural for leaves to be green, we seem to prefer almost any other color; and trees that show purple or bronze, variegated or spotted foliage, fill up much of the space in the dealers' catalogues. Nature gives us some leaves that are handsome because of the way they are cut or lobed, as the maple and the oak, but it is art that produces leaves that look as if they had been snipped out regularly with a pair of scissors till hardly any leaf substance remains; then if these little segments are curved in such a way as to suggest an eagle's claw, we get a very popular tree. A tree whose habit of growth is erect is greatly in favor if it can be made to weep or send its branches downward, and weeping ashes and birches find ready sale; while if the tree grows naturally in a somewhat drooping manner, like the elm, we are not satisfied till we have produced a pyramidal variety that sends its branches straight up like a Lombardy poplar. After scouring the whole continent of Europe for new species of trees, adventurous arboriculturists, sighing for new worlds to conquer, have turned their eyes toward Asia, and the latest fashions are all from the East. It looks as if there would be no halt till we have tried every tree that China and Japan can furnish. The similarity between the flora of these countries and our own renders it likely that such introductions will adapt themselves more readily to their new environment than have many of the Europeans; the ailanthus, the gingko, the mulberry and some of the magnolias have so far seemed to encourage this view, but the question is not one that can be settled in short periods of time. Since we must wait almost a lifetime before a final verdict can be pronounced in experiments of this kind, and as we are all a good deal restricted in the matter of lifetimes, our mistakes become practically irremediable. It is the province of the arboretums and other public experiment stations to pass upon all doubtful cases. With unlimited time and the power to command a great variety of conditions, they can give the foreign immigrant the most thorough trial, and decide whether it is capable of naturalization and what sort of a citizen it would make in our republic of trees. Failures here would not be so costly nor so depressing. Pending the decision of such a tribunal, let us restrict our individual planting to those trees

that we know will be a delight and a solace, not only to ourselves, but to succeeding generations—the trees that have sheltered our forefathers and inspired our poets. Lowell was too genuine an American to have had any exotic tree in his mind when he wrote,

> "Who does his duty is a question
> Too complex to be solved by me,
> But he, I venture the suggestion,
> Does part of his who plants a tree."

Perhaps a little account of the classification and relationships of our trees will not be out of place. Instead of belonging to a single order or family of plants, as is sometimes supposed, they are distributed among no less than sixteen different families; and if we include the introduced species, we find we have representatives of nine families more. The largest order, by far, is the *Cupuliferæ*, the great oak family, which is now made to include besides the oaks, the birches, the alders, the hornbeams, the chestnut and the beech, seventeen species in all, or nearly one-third of the whole number of our native trees. We are very rich in oaks. We have white oaks and black oaks, red oaks and scarlet oaks, chestnut oaks, and swamp oaks, all to be found easily in and about our city. They grow slowly and reach the greatest age of any of our trees. We are too new a country, and our efforts have been too long directed toward cutting down trees instead of preserving them, for us to have any reliable data as to their age; but in England there are oaks known to be a thousand years old. There is little doubt that the white oak standing in the fence at the east of the Thomas Street School is a genuine aborigine. Here was the first burial-place of the early settlers, and it is on record that the spot was shaded by a beautiful grove of oaks, of which this is probably the sole survivor. We are also rich in birches, having five native and three foreign species. The commonest of all, the little white or gray birch, is very generally known, but not half enough admired, I am convinced. There is no season in which it is not an important factor in the beauty of our New England landscape. The true white birch is the paper or canoe birch, often supposed to be confined to higher latitudes than ours; but as a matter of fact found all through this State and sparingly as far south as Long Island. Of course it does not attain the size here that it does farther north, but we have one specimen, that on the farm of Mr. F. J. Kinney at Tatnuck, which would compare favorably with the best of the great birches of the New Hampshire forests. Looking at this splendid tree, with its gleaming white trunk and branches, a birch-bark canoe

or tent seems a possibility. A large specimen of the black birch growing on the hillside west of Coes Pond has attracted a good deal of attention because of its peculiar appearance. The tree apparently started as a seedling from under the side of a large bowlder, and in growing its roots have penetrated a crack in the rock. As they have increased in size and strength, they have lifted a mass of this rock, estimated to weigh not less than fifteen tons, some distance into the air. The yellow birch was one of the vegetable loves of Thoreau, who considered the meeting it of sufficient importance to record in his journal. In one place he says of it, "The sight of these trees affects me more than California gold. In the twilight I went through the swamp, and the yellow birches sent forth a yellow gleam that each time made my heart beat faster." The commonest birch to be seen in our city is a variety of that English birch that the poets have called the "lady of the woods." I mean the cut-leaf weeping birch.

If we proceed on a numerical basis, the family to rank next in importance to the oak is the *Coniferæ*, or pine family, for it contains nine of our native trees, and a family that gives us the pines, spruces, hemlock, fir, larch, white and red cedar, and arbor vitæ will be generally allowed to have other importance than that of mere numbers. To have produced the white pine alone, would be enough to distinguish it. A tree of which Professor Sargent says, "It is the most valuable timber tree of the region it inhabits and no other tree, perhaps, has ever played such an important part in the material development of a country. It has brought cities and railroads and great fleets into existence, and furnished employment to tens of thousands of laborers." We no longer allow these trees to grow to the height of those we read of in the old forest, where they towered two hundred and fifty feet and more toward the sky, and we have little to help us in determining their age; but the two old pines bordering Institute Park, on Salisbury Street, and that in front of the Wetherell farmhouse, at Newton Square, must have been standing there before Columbus found his way across the trackless Atlantic. Instead of planting such a tree as this, or our beautiful hemlock, the Scotch and Austrian pines, the Norway spruce, and the gingko are too often chosen.

The family that gives us the walnuts and hickories, the *Juglandaceæ*, ought surely to be named next. The true walnuts are the black walnut and the butternut, but in New England we apply the term wrongly to the hickories. Though the black walnut is not indigenous to this part of the State, it is admirably adapted to our soil, and

makes a handsome as well as a very valuable tree. Opposite No. 38 Hanover Street is growing a real English walnut, a tree that is supposed to require a warmer climate than this. I have been unable to find out anything of its origin or history, but it produces an annual crop of nuts in no way inferior to those of the markets.

The *Sapindaceæ* includes the horse-chestnuts and the maples, each genus having a good many valuable species. To the Rose family belong, as all know, our best fruit trees, and in addition to the apples, pears, and cherries, it gives us the mountain-ash, the wild thorn, and the shad-bush. The *Salicaceæ* is the family that gives us the poplars and willows, quick-growing trees, whose wood is of slight value. Our native willows are mostly shrubs, but two of the European species, which make good-sized trees, were introduced here so long ago that they have become thoroughly naturalized in the older parts of our country. The locusts, the virgilia, and the red-bud are found in the bean family, the *Leguminosæ;* the tulip tree and the magnolias make up the family *Magnoliaceæ;* the nettle tree and the mulberries belong with the elm to the order *Urticaceæ;* while of the remaining species, the linden, the sumach, the tupelo, the ash, the catalpa, the sassafras, and the buttonwood, each is the sole representative of its family. Of all these trees, some are suited to one sort of planting and some to another, not all are adapted to being set out in our streets; but I wonder if a much larger number might not be profitably used for this purpose than is used here at present. One hesitates before making a suggestion to such a body of men as the Parks-Commission, who have done so much and such judicious work for the future in providing our new streets with trees; but I sometimes think the future citizen may weary of his miles of Norway maples, his leagues of rock maples, and his avenues of white ash. Perhaps these three species have proved themselves the best all-round trees for the purpose under the conditions that prevail here, where the two most necessary qualifications for a good street tree are said to be the ability to pick up a living on a scanty diet, and patience under abuse of every sort. But the best, if used exclusively, may become monotonous. Has the elm fallen into disfavor as a street tree? It would be hard to understand why, with such examples of its possibilities as Lincoln Street shows. The silver maple is seldom planted, and I know the objection is made that it is fragile and easily damaged in storms; but such trees as that at the Washburn place on Summer Street, and the one at the corner of Harrington Avenue, go far to restore our confidence in its hardiness. The linden and the

tulip, the tree of heaven and the poplar, are generally considered well adapted to the street, and I wish we might have avenues of oaks and beeches.

My only argument for the study of trees is the pleasure to be had from it. Of the educational value of such study I have said nothing. I believe I cannot do better, however, in closing, than to quote what Professor Sargent says of this aspect of the subject, in an editorial article in "Garden and Forest," entitled "The Tree as a Schoolmaster." "When its economic uses are to be considered a wide field opens to the tree-student as he learns how great a part it plays in every enterprise of man. To it he owes his dwelling and his boat, his oar and his weapon, often his clothing and his meat and drink; it has modified his character, determined his history, and been a staple of his commerce with other lands. Far-reaching has been its influence upon the race from prehistoric days until the time when the wooden walls of England became the bulwark of that liberty of which our independence is the outcome. Thus the story of the tree leads to the history of the race which it has so strongly influenced, and opens out the whole human horizon to its pupil. Hence he who makes a companion of trees, and seriously seeks to learn the secret of their importance, finds his own mind and knowledge constantly expanding with the effort to master this ever-widening topic. As the subject grows, he himself grows; his silent but wise instructor conducting him step by step to higher and wider outlooks; to a more comprehensive grasp of information; to a keener understanding of humanity; to a deeper reverence for nature; while filling him with unending surprise at the educational resources of that schoolmaster which has opened to him the door to the whole world of knowledge."

21st February, A. D. 1895.

ESSAY

BY

JOSEPH JACKSON.

Theme:—Our Native Plants and Flowers.

If the constantly increasing number of books, both technical and popular, which deal with plants and plant-life, is any sign of the interest in native floras, then there never was a time in the world's history when this interest was so widely spread or was more intelligent.

The great number of journals devoted to botanical and kindred investigations, the increasing number of public botanic gardens and private collections, the establishment of numerous agricultural schools and agricultural experiment stations over the civilized world, testify to the vast economic importance attached to the study of plants. Some departments of this study, as *e. g.*, that of the diseases of plants, have had an extraordinary development during the past few years. As most of our native plants, with the exception of trees and grasses, have little economic value, the interest that centers in them is one arising from sentiment rather than from any other consideration. And it will be admitted freely, I think, that sentiment is a very powerful factor in influencing conduct.

The child wanders through the lush grass in the meadows and fields and fills its hands with the flowers of buttercup and daisy, or, in earlier springtime, while the grass is yet upspringing, revels among broad blue spaces of the bird-foot violet, and lays in its memory the foundations of those palimpsests whose deciphering will be one of the pleasures of later years. Among the pleasing memories of our early years, when life is so full of wonders and the days and the years so full of life, there are few more pleasing recollections than those of the scenes which in some way are connected with the plants and flowers that have left so deep an impression on our memories.

Perhaps behind the little school-house, where, in the seeming endless summer days, we droned over the mysteries of the beginnings of learning, while through the open door the sunlight streamed in and the birds' songs came, and the multitudinous hum of insects, there was an oak-grove. There in June days we used to find the purple lady's slipper. This stands out distinct, vivid as lightning in a summer night. There may have been others, but they have left no impression. Yet the sight now of the purple lady's slipper sends the memory back through the flight of years and fills the stage again with its busy actors, and gives a special interest to this flower wherever seen.

The sights and sounds of early youth have a glamour about them which nothing in later years can destroy.

It is for this reason that emigrants love to carry with them to their new homes on the other side of the world some of the plants and animals associated with the old home. Froude tells us that in New Zealand the sweet-brier was long ago imported by the English missionaries, who liked to surround themselves with the pleasant home associations.

There is no prettier picture in Charles Reade's "It is Never too Late to Mend," than that of the thirty or forty rough fellows, mostly gold-diggers, who have gathered on a Sunday morning at a squatter's house to listen to a caged sky-lark.

"The song swelled his little throat and gushed from him with thrilling force and plenty, and every time he checked his song to think of its theme, the green meadows, the quiet, stealing streams, the clover he first soared from, and the spring he sang so well, a loud sigh from many a rough bosom, many a wild and wicked heart, told how tight the listeners had held their breath to hear him; and when he swelled with song again, and poured with all his soul the green meadows, the quiet brooks, the honey clover, and the English spring, the rugged mouths opened and so stayed, and the shaggy lips trembled, and more than one drop trickled from fierce unbridled hearts down bronzed and rugged cheeks.

"And these shaggy men, full of oaths and strife and cupidity, had once been light-headed boys and strolled about the fields with little sisters, and little brothers, and seen the lark rise, and heard him sing this very song.—And so for a moment or two, years of vice rolled away like a dark cloud from the memory, and the past shone out in the song-shine; they came back, bright as the immortal notes that lighted them, those faded pictures and those fleeted days; the clover field, the cottage, the old mother's tears when he left her without one grain of sorrow, the village church and its simple chimes; and the clover field again hard by in which he lay and gambolled, while the

lark praised God overhead; the chubby playmates that never grew to be wicked, the sweet hours of youth—and innocence—and home."

One never realizes how varied and abundant the local flora is until some special opportunity or special interest leads him to investigate carefully. Then, as the eye sees what it is trained to see or what it is looking for, new and farther reaching vistas are constantly opening. Even when the more conspicuous flowering plants are quite fully known, there is a larger world of flowerless forms, such as ferns, lichens, and fungi, and lower still, a world of algæ, desmids, diatoms, the portals of which we can enter only with the microscope, where the forms are of exceeding beauty and the problems concerning life are very enchanting. And just as the improvement in telescopes and in methods of photography have shown the existence of many heavenly bodies formerly invisible, it may be that we shall yet learn of vegetable forms still more minute than any yet discovered in which some of the mysteries that surround life may be made more plain.

The flora of Worcester County, so far as it has been recorded, contains 1,098 species and varieties, of which 55 are ferns and their allies. This is an addition of 286 during the last ten years. The record is by no means complete; in fact, such a record by the nature of the case can hardly be made complete, owing to the constant additions, permanent or casual, which are made through the channels of trade; *e. g.*, *Galinsoga parviflora*, Ruiz and Pavon, an immigrant from South America, is making itself at home in various parts of the United States, among them our city and county. In the same way, one of the hawkweeds, *Hieracium aurantiacum*, L., is becoming a pest on lawns in Winchendon. And, again, there are some plants, native but not abundant, at home in deep swamps, which have long escaped notice. I had supposed that of the four species of *Gaylussacia*, or huckleberry, described in Gray's Manual, only two could probably be found in our county, the black huckleberry and the dangleberry, until one day last June, a third species, the dwarf huckleberry, *Gaylussacia dumosa*, Torrey and Gray, was brought to me from Northboro, where it was reported to be quite abundant.

Dr. Bigelow in the third edition (1840) of his "Florula Bostoniensis," mentions only one locality for it, in the edge of Richards' Pond, Brookline; and G. B. Emerson, in his now classic work on the trees and shrubs of Massachusetts, refers to it as rare, and mentions one locality, Manchester. Both of these authors put it in the genus *Vaccinium*, from whence it was transferred by Torrey and Gray to *Gaylussacia*. It may be of some interest in this connection to recall

the fact that the ancestors of Asa Gray, the most distinguished American botanist, were among the early settlers of Worcester. In his autobiography he says: "My great-great-grandfather, John Gray, with his family, among which was Robert Gray, supposed to be one of his sons, emigrated from Londonderry, Ireland, to Worcester, Mass., being a part of a Scotch-Irish colony. The farm they took up was on the north side of what is now Lincoln Street." This was in the year 1718, four years before the incorporation of the settlement as a town. Moses Wiley Gray, one of the grandsons of John Gray, married in Worcester and afterwards moved to Templeton, and later to Oneida County, New York, where Asa Gray, one of the grandsons, was born in 1810. In the early records of Worcester the name Gray is of frequent occurrence.

The great order, Ericaceæ, or Heath family, to which the huckleberries already referred to belong, is well represented in our local flora. Of the twenty-six genera described in the Manual, which includes the district east of the Mississippi and north of North Carolina and Tennessee, all but nine are represented in our flora; and of the sixty-nine species, thirty-five are also found here. On some accounts this is one of the most important families represented in our flora.

It contains the two genera, Gaylussacia and Vaccinium, which yield plentiful supplies of huckleberries, blueberries and cranberries, and such genera as Kalmia and Rhododendron, which furnish some of our handsomest shrubs.

One of the most interesting native plants of this order to me personally is the Labrador Tea. I had known of it long before seeing it. In Emerson's "Trees and Shrubs," I had seen his reference to Hubbardston as one of its localities. One of my friends who had landed on the coast of Greenland, where flowers of great delicacy bloom at the foot of glaciers, had shown me sprays of it in leaf, but without blossoms; and at last another friend brings me some which he had found growing naturally within three miles of this hall. It must have been much more abundant formerly. Soon after the passage by Parliament of the famous act imposing a duty upon tea and some other articles imported into the American colonies, a meeting was held in Boston to take action concerning the use of such taxed articles, and a resolution was passed to refrain from using them. The execution of the resolution against tea required the aid of the female part of the household. A female convention accordingly assembled in Boston and agreed to discontinue the use of the taxed tea and to

substitute a native shrub, Labrador Tea, an inhabitant of the meadows and swamps. The patriotic ladies of Worcester concurred in the resolutions of the women of Boston. But there were royalist women in Worcester who loved both their tea and their king, who had influence to cause these resolutions to be set aside. Lincoln's History of Worcester gives the cause assigned for this action.

Another of the native plants which dates its name from that time is the New Jersey Tea, *Ceanothus Americanus*, L., its name implying its use. This, unlike the Labrador Tea, is quite abundant in our neighborhood. It does not belong, however, to the Ericaceæ. The water andromeda, *Andromeda polifolia*, L., is kindred in interest with the Ledum. Andromeda is a famous name in classic poetry, in art, in astronomy, as well as in botany. Her name may not just now be on as many tongues as Trilby's, but it will probably survive longer.

The classic story of the beautiful maiden, Andromeda, chained to a rock on the seashore to await the coming of the dreaded sea-monster which will devour her, that so the sin of her mother may be expiated, is as well known to the student of English literature as to the student of Greek and Latin. There is no finer specimen of hexameters in English poetry than Charles Kingsley's poem, Andromeda, or any more interesting tale in Morris' Earthly Paradise than the "Doom of King Acrisius," which contains the same story. But Andromeda was rescued from this hard fate by Perseus, returning from his quest for the head of the Gorgon, and he claimed her for his bride. The astronomers transferred their names with those of her father and mother, to groups of stars near each other in the northern sky. There, whoever will look up on a clear night may see Andromeda spreading her long white arms in the height of the æther, and near her are Cepheus, her father, and Cassiopeia, sitting in her ivory chair as she plaits ambrosial tresses. Linnaeus tells us that, as he contemplated this lovely plant in the swamps of Lapland, the poetic legend filled his mind and made the name seem most applicable. I have made search and inquiry in all parts of the county, but Westborough is the only town as yet where I have succeeded in locating it, and that only last October.

Before that time its nearest habitat known to me was Whitehall Pond in Hopkinton, which is just outside the line of our county. It is one of the native shrubs which is well worthy of cultivation, for its intrinsic beauty both of flower and foliage. Who knows in what grateful way it might repay the labor devoted to it?

Linnaeus raised to Peter Kalm, one of his favorite pupils, a monu-

ment more enduring than brass and nobler than the royal structure of pyramids when he named for him the exclusively American genus, Kalmia or laurel. The name of Kalm is thus preserved safe from the effects of destructive storms or the flight of time. His fame cannot wholly die so long as, all over the civilized world where the Kalmia grows naturally or as an exotic, his name is perennnially upon men's lips. In the whole of North America, north of Mexico, there are but five species, three of which are abundant with us, the other two being confined to lowlands along the coast from Virginia to Florida. The pale laurel, *Kalmia glauca*, Ait., comes into bloom early and escapes observation, except from those who are seeking it. It is followed by the sheep laurel, *K. angustifolia*, L., and the mountain laurel, *K. latifolia*, L., perhaps the most conspicuous flowering shrub in June. Kalmia blossoms have a special adaptation for cross-fertilization that is worthy of notice. In the flower-bud, each of the ten anthers is lodged in a small cavity, and the filaments are nearly straight; but when the saucer-shaped corolla is fully opened, these filaments are curved outward and backward, resembling a curved spring. The anthers, unless aided, cannot get out of those little cavities or shed their pollen. Humble-bees in search of nectar, touch the filaments, brush against them with sufficient force to dislodge the anthers, when the filaments spring back with considerable energy and throw the pollen from the two orifices at the apex of the anther cells. Some pollen may be thrown in this way upon the single small stigma at the tip of the style, but some of it is thrown upon the underside of the insect's body, from which a part at least is brushed off upon the stigmas of other flowers. Nature is most prodigal of pollen. She is profuse in her expenditure of resources to accomplish her ends. In fair weather we shall find few of the fully opened flowers that have not been visited by some insect, as is shown by the now dislodged, incurved and relaxed stamens.

Our woods present no more charming sight than a path lined on both sides with this handsome shrub in full flower.

I have now in my mind such a one. It should be seen on one of the rare June days. Far off through the waving branches overhead may be seen the pale blue sky, flecked here and there with a thin streak of cloud; butterflies are flitting slowy by; the caw of a distant crow, or the scream of a bluejay near at hand, or the twitter of the smaller birds tell us of the bird life around; and on each hand are these beautiful pink or white flowers in such profusion that we scarcely know which to pluck or which to leave behind.

Kalm dedicated to Dr. Gaulthier of Quebec a genus of plants which embalms his memory, commonly called wintergreen, or checkerberry, or partridge-berry, or box-berry, but known to botanists as *Gaultheria procumbens*, L. This, too, is a peculiarly American plant, and is well known by its pleasant aromatic flavor, its shining evergreen leaves, its delicate flowers, and its scarlet berries. It is very generally distributed throughout New England, where it can enjoy the protection of evergreen as well as deciduous woods, and is about as well known to young persons as any of our native plants, not excepting the trailing arbutus. This is, however, only one of eleven species of low evergreens of this family which help to carpet the forest floor. Besides it are the well-known trailing arbutus, the creeping snowberry, one of our rarest species, the bearberry, the two species of chimaphila or pipsissewa, the four species of pyrola or wintergreen, and the one Moneses or one-flowered pyrola, one of the daintiest of its tribe.

A springtime would hardly seem like itself if we did not see in the early days the fair, white racemes of the leather-leaf, *Cassandra calyculata*, Don, mingling with the purple blossoms of *Rhodora*; or if, in the latter days of the spring, we did not see the fragrant and charming *Leucothoe* near by the pink azalea, *Rhododendron nudiflorum*, Torr. The expansive beauty of the *Rhododendron maximum* is meet for the tropic splendors of late June or early July.

We are proud of our representatives of this great order. This pride does not prevent us from appreciating the beauty of the heath or heather of Great Britain when it empurples the hills and the moorlands.

Should it be our fortune ever to visit the Cape of Good Hope and see its hundreds of forms belonging to this great family, we should appreciate them the more from their kinship with our forms. The exotics shall be partners with the natives in the great enterprise of making the world better and brighter, of filling it with sweetness and light. They should not be rivals. There is no need or place for such rivalry. The world is wide enough for both, and better because both are in it. May they both flourish!

In the early spring, while the hordes of insects are not yet astir, but while the winds are never sleeping in their efforts to restore the equilibrium of the atmosphere disturbed by the northward progress of the sun, the wind-fertilized or anemophilous flowers open. The numerous catkins of the alders, hazels, birches, oaks, walnuts, butternut, beech, sweet-fern, sweet-gale, bayberry, hornbeam and hop-

hornbeam, which were formed during the preceding summer, now scatter their fertilizing pollen freely and abundantly to the wooing breezes. Such flowers lack the color and the perfume which render so many insect-fertilized flowers so attractive. Not depending on the visits of insects to secure fertilization, they do not need the attractive charms which would bring them. They do need projecting stamens laden with pollen, most of which may be wasted, but enough will remain to accomplish the desired purpose. The fact that the leaves of these trees and shrubs are not yet expanded, would seem to indicate that Nature does not wish to interpose unnecessarily any obstacle to the pollen on its journey to the waiting stigma. But the general interest does not lie in such flowers as these which contain the essential organs but lack a showy calyx or corolla.

Three or four flowers of spring seem to have most of the beauty of the season wrapped up in themselves. What is more dainty than the pale blue blooms of the hepatica, or more evanescent than the sepals and petals of the blood-root, or more delicately fragrant than the pale pink flowers of the trailing arbutus. To be seen at their best, however, they must be seen in their native haunts, beside the babbling brook, among the lichen-covered bowlders, under the pines, but always in the free, open air with the bright sky overhead. The spirit of Emerson's little poem, "Each and All," enfolds them. They cannot be separated from their natural environment without losing some of their natural beauty.

In the deep woods, it may be, we shall find late in April the early yellow violet, whose praise Bryant sang, probably at Cummington, in the interval between the composition of those two matchless poems, "Thanatopsis" and "Lines to a water-fowl." Near by it should be seen the small yellow flowers of the yet leafless stems of the leatherwood, *Dirca palustris*, L. The dog's tooth violet was the first flower I was able to identify by a careful study of its structure. Till then I cannot say that I had really seen it, although since then I have seen meadows all yellow with it. Perhaps my eyes had been before like mirrors, which reflect the light and images of objects, but themselves see nothing. I look for it now every spring. If I should not see it, something would be wanting to the perfect charm of that delightful season.

One of the shrubs or small trees which cannot fail to attract attention by its abundance in the yet leafless woods is the shad-bush or June berry. Its numerous white flowers in drooping racemes are then far seen and show the large number of individuals, which would

not be expected later in the season, when the other shrubs and trees are in full leafage. With the shad-bush we associate the troop of violets, five or six species of which may easily be found in the early May days.

Not many of the earlier flowers of the year are classed among the weeds. The weeds start early enough, but realizing that they have all summer and autumn to ripen in, they do not hurry to bloom. Perhaps they escape notice and many mishaps by lying low until the more useful vegetation has attained a sufficient growth to overshadow and protect them.

The most conspicuous weed of spring is the dandelion. Its mode of growth is worth more than a passing notice. In the animal world it would seem to imply a great deal of instinct or inherited memory, or whatever we choose to call it. It opens its flowers at first on a short scape or flower-stem, which lengthens during blossoming. After all the flowers have been expanded long enough to ensure fertilization, the inner involucre closes, and the cells on one side of the stem contract, drawing it down almost to the ground. In this position the fruit ripens, and at the same time the slender beak of the achenes elongates, carrying up with it the crown of soft white hairs. When everything is ready for the distribution of the fruit, the cells of the stem expand, the stem stands erect, the involucre is reflexed, and the achenes or seed-like fruits, with the pappus displayed in an open globular head, are ready to be carried by the lightest wind to form a colony away from the parent plant.

Within a week of each other, sometimes before the middle of May, the shepherd's purse and the low spear grass will be found in bloom, perhaps both close together. I look at them with an added interest since I read Sir J. D. Hooker's "Himalayan Journals" a few years ago. The following quotation contains one of the best expressions of the delights of scientific travel, and that shall be my excuse for quoting it in full.

He is writing under date of November 25th, 1848, on one of the passes of the Himalayas in East Nepaul, at an elevation of 13,000 feet. He says: "Along the narrow path I found the two commonest of all British weeds, a grass (Poa annua) and the shepherd's purse. They had evidently been imported by man and yaks, and as they do not occur in India, I could not but regard these little wanderers from the north with the deepest interest. Such incidents as these give rise to trains of reflection in the mind of the naturalist traveller; and the farther he may be from home and friends, the more wild and

desolate the country he is exploring, the greater the difficulties and dangers under which he encounters these subjects of his earliest studies in science, so much keener the delight with which he recognizes them, and the more lasting the impression which they leave. At this moment these common weeds more vividly recall to me that wild scene than does all my journal, and remind me how I went on my way, taxing my memory for all it ever knew of the geographical distribution of the shepherd's purse, and musing on the probability of the plant having found its way thither over all Central Asia and the ages that may have been occupied in its march."

Every one familiar with the native flora must have similar, if not quite as striking, experiences, if he has travelled far from home. Years ago I found the enchanter's nightshade, *Circaea alpina*, L., among the rocks of "Purgatory" in Sutton. I had something of the feeling expressed by Hooker, when I afterwards saw it growing in a similar situation in the "Trossachs" in the Scotch Highlands.

Of the royal families of plants, those remarkable for their great number of species, beauty or usefulness, such as the palms, the ferns, the compound flowers, the grasses, the leguminous plants, we have many representatives of all but the first. The palms, a tropical and sub-tropical family, have no representative so far north of the Equator, although some species grow on the mountain-sides within the tropics, which would seem to suggest an ability to adapt themselves to a varied environment. While the ferns reach their greatest development, both in size and in beauty, within the tropics or near by, many of these beautiful genera have one or more representatives in our own flora. In my friend's greenhouse I shall find quite a number of species, delicate and graceful, of the large genus Adiantum. It adds to my interest and pleasure in our one native species, the maiden hair, to know that it belongs to so good a family. We will bear in mind, too, that the exotic species which we find in cultivation are the result of careful selection during a series of years of the species best adapted for that purpose. If we can have only one species of climbing fern (Lygodium), we are thankful for that, and sorry for our neighbors farther north who are denied this privilege. We have something of the best there is along nearly every line.

To a native of the tropics the palm family is undoubtedly the royal family. To a native of the Temperate regions the grass family has the same high rank. No family of plants contributes so much to give a pleasing aspect to the landscape. Each of the grand divisions of the world has its large characteristic grassy plains, the prairies of the

Mississippi valley, the pampas of South America, the steppes of Europe and Asia and the similar lands of Africa and Australia.

No other family has greater economic value. Through centuries of cultivation, some of them have been developed into the staple food-plants of the world. The teeming millions of southeastern Asia cannot starve so long as the sugar-cane, rice and bamboo flourish; nor the teeming millions of Europe or America so long as the earth brings forth its bountiful harvests of wheat, corn, rye, oats, barley and fodder grasses.

Most of the cultivated grasses are natives of the Old World, but are widely scattered over the New. The New World in return, has given some gifts to the Old, the greatest of which is maize. Cultivated in the United States, over nearly 80,000,000 acres, it is the largest arable crop grown in any country, the crop of a single year in measured quantity exceeding the entire wheat crop of the whole world. What more fitting floral emblem for the great Republic than this kingly plant whose grain is of the color of gold, which is grown to some extent, in every State and Territory in our Union, and in almost every county in which agriculture is carried on! The grass family is probably the most widely diffused over all the habitable parts of the globe, reaching the outposts of flowering plants, both in the polar regions and near the snow-line on high mountains. About 3,500 species have been already discovered and described, of which about 700 are found in the United States, and 80 in our Worcester County. In the early history of this country, particularly in the northern States, while the settlements were scattered, the native grasses and the natural pasturage were sufficient for the needs of the population. Afterwards, grasses well adapted for cultivation were imported from the mother country, and now cover large areas. Nearly a third of our grasses have been introduced, some by design, some by accident; all are naturalized. The humbler grasses may be proud of their noble kinship and of their family reputation. There are few weeds among the grasses. Some of the grasses are valued for ornament.

Quaking-grass, *Briza media*, L., with its showy drooping spikelets on delicate pedicels, is an ornament to many an upland meadow; oat-grass pleases with its slender drooping panicle; velvet grass attracts attention by its pale color and soft downy appearance, and *Brachyelytrum aristatum*, which has no common name that I know, probably because it is native and largely unobserved by the common people, who give common things a common name, will long help to decorate the margin of rocky woods.

I think that formerly, the native plants, or rather those growing wild, were better known by most people than now. The development of civilization has a tendency to gather people together in constantly enlarging communities, where the competition of business life absorbs most of the attention; but a stronger reason, probably, is the change constantly going on in medical practice. In olden times, there existed a real and sincere art of healing, which rested mainly upon the knowledge of herbs. There was some quackery which attached itself to the genuine art, false notions which had powerful effects. Mineral and chemical remedies are comparatively modern. The vocabulary of our language proves this. The term *drug* is from the Anglo Saxon *drigan*, to dry. The first drugs were dried herbs; so that the study of plants naturally was identified with medicine by long tradition. When, in the 16th century, the chief cities of Europe established gardens for the study of plants, these gardens were called Physic Gardens, a name not long extinct.

Our flora contains a number of plants which have had more or less repute. The first ship loaded from what is now Massachusetts, carried to England a load of sassafras. In the list of our plants of this character we may include the liverleaf or hepatica, meadow rue, goldthread, barberry, pappoose-root, blood-root, violets, mallow, toothache tree, buckthorn, agrimony, hamamelis, caraway, ginseng, fever-wort, thoroughwort (a satisfactory and suggestive name), elecampane, yarrow, wormwood, coltsfoot, chiccory, lobelia, Indian hemp, vervain, pennyroyal, catnip, motherwort, self-heal, plantain, slippery elm,—but I cannot exhaust the list. Some of these are native, some naturalized, but now fully at home.

In our great number of species there are many that are beautiful and worthy of cultivation. Some of them are sought for this purpose in Europe. It is natural that the common should appear to have less value than the rare or exotic.

It is the fate which plants share in common with all objects of human consideration. But on that account our local flora is not the less worthy of a share of our interest; it will, in fact, enlarge our interest in the exotic flora of the greenhouse and in the botany of the world as a whole. The material for such study is abundant and cheap. There will always be some people who will appreciate it fully.

DISCUSSION.

Mr. Draper. I feel as if I was stepping upon unfamiliar ground in trying to enter into a discussion which this paper would naturally

suggest, but I wish here and now to voice my appreciation of the work that Mr. Jackson has done for the botanical interest and education of the City of Worcester.

We have not forgotten his work rendered here several years ago, nor his first published list of the Flora of Worcester County. And now he comes forward and adds to this work, standard works, few of which are published in our cities.

A person who is not conversant with botanical knowledge, can at the proper seasons familiarize herself or himself with a great deal of the natural flora of our vicinity. And I, for one, certainly appreciate and voice the sentiment of all true lovers of nature.

I think Mr. Jackson must feel to-day that, for an inclement day, his audience shows their appreciation of his work already rendered, and the things shown in his paper. But you and I, Mr. President, notice here familiar faces that are constant attendants at our discussions on other themes. I am confident that there are others here who are far more deeply interested in this subject than the one who is now addressing you, and who, from early spring to late fall, are looking out and finding in their favorite botanical recesses, these little flowers and plants that have been described.

I claim that I have not the ability to draw these young ladies into the pleasant conversation and discussion as if they were in the classroom with Miss Tucker. I wish it were possible now that the meeting might take up an informal matter, and that they might question our speaker in an informal way and get the fullest benefit of the meeting, by discussing the native flora of this section.

Mr. Jackson. I want to give one illustration of the way in which a person gets acquainted with the native flora. Some dozen years ago a list of the plants I wanted to preserve was printed in the *Spy*, as often as they amounted to fifty.

A physician in this city, in very active practice, who had preserved the whole set, showed me one of those slips that he had cut out of the paper, and said that when the proper time came he would take out the proper slip for the season, and as he rode along through the country and saw a flower he was not familiar with, he would take out the slip, and by noting the day of the month he could in a great many cases tell what flower he had got, by seeing how near it was to the description on the paper, as he had not time enough to spare to analyze the plant. He said that he made out a great many of them by doing so. I think it adds very much to our interest in plants to see what somebody else thinks about them.

INQUIRER. I would like to inquire what the Professor means by "upland meadow"? "I mean what is sometimes called pasture."

"I never found any Quaking Grass on high land; I have only seen it in low land, where it is damp and moist."

CHAIRMAN. It is unfortunate for the chair that he does not know some of the faces that are present, who could tell us something. I hope that they will have something to say without being called upon.

DR. HODGE. I don't know whether I belong here or not, but I will try to make a few remarks. I am exceedingly glad to have the opportunity to thank Mr. Jackson for the book which I have read with so much interest this winter, and I encore Mr. Draper's remark on getting out a book of that kind. When your President called for a botanist I certainly could not respond, and I am very sorry for it, but there are not very many botanists in the country that I know of, and whether the fault is in the way that we are trained in the schools, or whether the fault is in ourselves I won't stop to say. But I look upon this movement which Mr. Jackson has been forwarding in Worcester as one which gives to my mind the greatest hope of making everybody a botanist, and advancing to them the knowledge of the flowers and plants that they are treading on every day.

I remember the first time that I ever saw Kalmia. It was after I came to Baltimore for the purpose of finishing my university course, and the people there said I ought to go out and see the mountain laurel, and told me the place where I could find it. I don't think I was ever more surprised. I went out into the woods in the suburbs of Baltimore, and simply forgot all about lectures, laboratories, and life in general. I have often wondered why we don't have more of it in our gardens and walks. It is a beautiful bush. The specimens we see in the pastures are torn by the cattle and the boys.

It seems to me that we go a great way for shrubbery, which in the point of interest does not come within miles and miles of our native flora.

There is another meaning to the botanical movement which Mr. Jackson has made here, and that is, that the commonplace common things, if we only stop and look at them, are often in reality the most beautiful things we can find in the flora; and the fact that they are common, if our attention is not called to them in some such way, makes us overlook them. If we would only stop and look at them, we should see beauty in them which would make life have a greater meaning; instead of our simply passing over everything in the world about us.

I wish to thank Mr. Jackson again for the talk this afternoon, and the book he has written.

CHAIRMAN. Speaking of the common mountain laurel, I have perhaps a hundred plants which have been transplanted mostly from the woods and pastures, and I have not yet made up my mind that I know fully how to grow them well. But I am on the road; and if I should live a few years longer, I should be able to cultivate the laurel with success. I have some also which were imported; I don't mean come from foreign countries. Of course I would have to have some that were imported, and they seem to thrive well. I don't seem to see much difference in the bloom. I was in hopes of getting some of higher color than our native laurel, but I don't see much difference in the bloom; they are full of blossoms in their seasons, more so than the wild ones. It is a plant which, I think, gives the best effect in the winter season, when we see the leaves under the snow. It has a leaf that does not die or wither in the winter season, and I think there is no plant that is so generally overlooked, because, I suppose, it is so common that it is not thought worthy of cultivation, and almost everyone can adorn his grounds and premises with laurel with very little care.

There is another plant Mr. Jackson has spoken of, and which I take a little pride in, and that is blood-root, and probably I can show a larger cultivation of blood-root than anyone in the Commonwealth; not that I can give myself any credit for it, for it comes up spontaneously. When it is in bloom, there is nothing on the premises that shows off as well. I have cultivated nearly one-half acre of it.

INQUIRER. Have you ever cultivated any *Andromeda?*

I have four varieties which give me a great deal of pleasure. It thrives well on high ground, and it has a beautiful leaf, so white on the under side.

INQUIRER. I would like to inquire the general appearance of the laurel when it is cultivated?

When the laurel is in its best condition, it not only has a large leaf, but the perfume is very profuse; much more so than when we see it in its wild state.

FROM THE AUDIENCE. *Mr. President*,—I am aware that you are somewhat abashed by the array of young ladies before you, and you have not discovered the presence of the botanist,—the teacher at the Normal School.

MISS TUCKER. I can only say, that I have enjoyed very much listening to Mr. Jackson; and I fully agree with him in his defending the

native shrubs as well as the trees for cultivation. I have made great use of Mr. Jackson's list of the plants of the county, for several years past, and I feel greatly indebted to him for his contribution to us in the works of that kind, and I think as all the rest of you do.

Mr. Watts. *Mr. President, Ladies and Gentlemen,*—There is one thing my attention was called to in the essay, and that was, when he made the remark that people at present don't seem to understand as much about the flora of the country as the people of the old times did; and he accounted for it in the way that they used those herbs for medicines and for medicinal purposes.

Indeed, I can well remember that about thirty or forty years ago it was my lot to be cast with some of those older people, and my recollection dates back to that time. And, now, when I find any particular plant that I cannot remember the name of, as the older people used to give it, as soon as I can find out the common name of it, I turn to the botany, and there discover its proper botanical name.

It is very interesting to note in regard to common names, that if there is any particular common name for a flower in one part of the country, other parts of the country will call it by another; and I tell my children to impress these names on their minds, and then it is easy to turn to the works of the botanist and discover the technical name.

I remember once one of the ministers of Cherry Valley drove up to my house, and picked some flowers. The children he had with him were studying botany, and when he rode up to the house, he called my attention to a flower and asked me if I knew what it was. I told him "yes." He said, "What do you call it?" I said, "I call it ground-nut. Do you want anything more?" He said, "I would like the botanical name?" I turned to Gray's Botany and looked it over, and found that ground-nut proved to be *Aralia*. He said that he had never been able to find anyone that could tell him the name before.

My boy picked up some specimens in our neighborhood, and carried them up to the Academy, and the teacher who was teaching botany there could not tell him the name of it. The boy knew it was wild ginger and there was no reason why he (the Prof.) should not know what it was. He analyzed it, and discovered what it was. It is only those who have hunted for wild ginger particularly, who would know what it was. There is no one here probably, who has ever seen the blossom of it.

I believe in these discussions, and the bringing out of these ideas, so as to make it interesting to the people. They must keep their eyes and ears open and hear what is said, and then retain it.

Mr. Jackson. I think there is one drawback in the minds of a great many people who study botany, and that is the difficulty they find in learning the hard names.

When I started in on the subject, I found that I could learn only one at a time, but after a while I had a long list of them. I took interest in the plants and remembered them merely because I wanted the botanical names, and could therefore retain them. The botanical names are not so hard as to discourage anyone. The shorter names are not so hard but that children learn them. One of the first things one wants to know in the study of botany, is the name of the plant he has in mind, just the same as he wants to know the names of the people he meets. He takes an added interest in every one whose name he knows, especially if it is a well-known name. People sometimes think they cannot learn the names themselves, and therefore discourage others. It is a very simple subject after a time.

28th February, A. D. 1895.

ESSAY

BY

BURTON W. POTTER, Esq., Worcester, Mass.

Theme :—Forestry Preservation.

A succession of several dry seasons makes people begin to speculate on the cause thereof. Some say there have always been droughts and water famines, and there always will be, do what we may. Others say they are made by man and not by nature, and therefore they may be prevented by human action. Providence is frequently held accountable for many things it is not in the least to blame for. We sometimes bring sickness, disease, and poverty upon ourselves by the violation of the ordinary and well-known rules of health and economy, and then as an excuse for our misconduct and laziness we attribute such calamity to a visitation of God. Sickness is always with us; but that does not excuse us from trying to live in accordance with the laws of health, in order that we may burn out and not be snuffed out. The poor we have with us always; but that is no reason why we should not strive for good laws and right living, in order that the number of the poor may be as few as possible. God is not responsible for results in human life until we have exerted, to a reasonable extent, every moral, mental, and physical faculty at our command. When the experiences of ages teach us that the proper condition of the climate, soil, and atmosphere depends upon the right proportion of forests to arable land, we should be careful not to disturb the equilibrium by cutting off too much of our forests. The best scientific authorities maintain that nearly every country needs to be covered by forests over at least one-quarter of its surface. It is a well-established fact that the amount of rainfall in a country depends, in great measure, upon the area covered by forests in that country. There are some parts of the earth that used to have a fertile soil, a moist climate, and streams always full, but seldom swelling to disastrous

floods, which are now dry and barren, with infrequent rains and dusty river channels, along which, after a rare storm, impetuous torrents rush with destructive force for a short time, and then dwindle rapidly and soon disappear, leaving the stream-beds as dry as before.

Those regions, in the days of their happy estate, were well wooded; while now, in the days of their desolation, they are almost destitute of forests.

In ancient times Syria and the Holy Land, and all the region on the southern shores of the Mediterranean, from the River Nile to the Straits of Gibraltar, were fertile and well-wooded countries; the very garden territories of the earth. The hills were clothed with groves of olive, sycamore, cedar, and palm trees. The low lands produced, in rich abundance, wheat, barley, figs, pomegranates, milk, and honey. Everywhere springs gushed forth from the well-watered soil, and brooks and rivers flowed through the valleys. In those early days a teeming population flourished upon the productions of the soil, and carried their civilization into the surrounding countries. But now the hillsides are no longer covered with forests, and exhibit bare and precipitous rocks, while dusty and burned-up soil covers the low lands, where frequently not a vestige of vegetable or animal life can be seen for hundreds of miles around.

When the tree-hating Arabs and Moors overran these countries, they cut down and burned up nearly all the trees then standing, and thereby produced a change in climate and atmosphere which has made this primitive garden soil a desolate waste.

But the southern and eastern shores of the Mediterranean are not the only places which have suffered by the destruction of forests. Everywhere, the world over, the greed of men, when unrestrained by law, has cut down the forests without stopping to consider the consequences. And many tracts of land which were formerly partially covered with stately forests, and where the soil was well watered and fertile, are now almost arid wastes. Austria, as a whole, is a well-wooded country; but its shore provinces around the Adriatic Sea are almost denuded of forests, and the land is little better than a desert. In ancient times the hardwood timber of these provinces supplied the Romans with materials for their ships and buildings; and at a later day this timber, in large quantities, was used for ship-building and pile foundations in Venice, when she was in her glory and queen of the seas; and in the sixteenth and seventeenth centuries the merchants of Holland and England purchased and carried away the rest of it. After the forests had disappeared the native inhabitants dug up the

stumps and roots for firewood, and grazed the treeless land with sheep and goats, until there was not a vestige of forest growth on the plains and hillsides of a once beautiful country. The climate, which was naturally mild and temperate, became changeable and unreliable, landslides and avalanches became common, the mountain brooks dried up, and the rivers became shallow. The whole face of the country was changed from its former rich and fruitful condition to sterile plains, interspersed with stony and parched hillsides, populated with half-starved sheep and goats, and poor farmers.

Mauritius, in 1864 and before, was a mass of verdure, and was called the "pearl" of the Indian Ocean. The forests were cut off to gain space for sugar plantations, and then the rainfall diminished. The rivers and brooks dwindled down to muddy streams or dried-up basins; the water became stagnant in cracks, crevices, and natural hollows, while the equable temperature of the island entirely changed; drought was experienced in the midst of the ocean, and thunder-showers were rarely any longer witnessed. The lagoons, marshes, and swamps along the seaboard were no longer filled with water, but gave off noxious gases; while the river water became impure from various refuse.

To remedy this evil the Government caused the mountains and hills to be again covered with planted trees, and the rivers and streams resumed their former dimensions.

I might go on and show how the destruction of forests has injured the soil and climate of Spain, Southern France, India, and other places; but it is unnecessary to accumulate evidence on this point, for it is doubtful whether the earth itself would be habitable for man were it not for trees and forests. Unprotected by the shade of trees and the humidity arising therefrom, the scorching rays of the sun would be hard for him to bear. The air, unpurified by the process of tree growth, would be poisonous to him. The cold blasts of winter, unchecked by forest barriers, sweeping over the hills and through the valleys as water pours over a dam or through a sluiceway, would chill the life blood of the most vigorous, and sweep the entire race from the planet.

The rulers of the most enlightened governments have long felt that the preservation of a reasonable amount of forests is necessary for the increase of national wealth, the maintenance of a water supply, the equability of the climate, and the fertility of the soil. Nearly every government in Europe is now making laudable efforts to reclaim all unfruitful land by planting the rocky hillsides, the sandy dunes, and

the barren plains, with millions of young trees. Countless millions of young trees have been furnished gratis to the inhabitants of these desolate regions for planting, and experiment stations have been established at all central points for the raising of trees adapted to the climate and soil of those localities. When the people have been found indifferent to their true interest in this regard, they have been required by law to work a certain number of days each year in planting trees on land condemned and taken for that purpose, or to contribute an equivalent in money, to be used by the official foresters in the same work. But to the credit of humanity in modern life, be it said, a great many communities have taken hold of this work with zeal and energy, and much has been done to reclaim waste land and cover it again with trees of the best species. All this has a tendency to bring into re-existence, as it were, land which has seen better days; and every acre of land thus recovered secures to mankind increased happiness and sustenance upon the earth. It means new roads and cities to build, new farms to cultivate, harbors and rivers to improve and fit for navigation, schools to establish, and wood and timber to use in the erection of new dwellings, and the enlargement of warmth and comfort in those dwellings. Man, and not nature, made this waste soil to lie fallow for centuries, and now it is the duty of man to reclaim and rejuvenate it by replanting it with forest trees, and thereby restoring it to its primitive beauty and productiveness.

Without giving in detail the forestry laws of the different European nations, I will briefly state the general purport and scope of those laws and the measures the governments adopt to secure their wise and faithful execution. It is the aim of the governments to have about one-fourth of the entire area of the country covered with forests. There are three kinds of forests,— State, communal, and private; but the governments exercise full control over them all.

Pasturage is not allowed in the State forests, but sometimes hogs properly guarded are admitted for the purpose of destroying insects and their eggs. Poor folks, living in the vicinity, are generally permitted to gather and carry away for their own use, without charge, the dead branches, and the brushwood which remains unused when timber is cut for the market. They are also allowed to pick the berries and harvest the mushrooms. The people at large are allowed to frequent the State and communal forests, and to hold picnics therein, subject to the rules and regulations prescribed by the proper authorities. At certain seasons of the year portions of them are leased for hunting-grounds to individuals or societies, who are required to pay a fair compensation

for this privilege. When the trees are large enough for timber, they are cut under the direction of the official foresters, and the wood and timber is used by the State or the commune so far as needed, and the remainder is sold at market prices.

Sometimes fruit trees are planted in the forests and along the public roads, and the nuts and fruit thus raised are sold for the benefit of the State or the commune. The forest revenues are usually much larger than the forest expenses, and the surplus is applied to the repair of the highways or other public improvements.

The private owners of forests are allowed to occupy and manage them under prescribed rules and regulations, and to receive all the income therefrom; but they have to be very careful not to commit any trespass on their own land. They are not allowed to cut down their forests, wholly; and they must cultivate them in a manner not to endanger their growth or destruction. Sheep and goats must not be pastured therein, nor cattle, until the trees are of good size. The oldest trees and those most fully developed must be cut first, and sometimes an official forester must designate the trees which the owner is allowed to cut down. Barren spots and all unnecessary paths and gullies must be planted with suitable trees. The felling of trees must be in such a manner as to cause as little damage as possible to young growths or neighboring trees.

The supervision of all the forests of the State, the commune and private owners is entrusted to official foresters, who are appointed by the State and educated at forestry schools.

In addition to the forest laws, nearly every country in Europe has forestry schools in which exact knowledge of all branches of the science of forestry are taught. The special studies are zoölogy, botany, mineralogy, geology, physics, chemistry, climatology, the history of forests and their uses, tree culture and forest management, agriculture and political economy, road building, and the civil law relative to forest, hunting and fishing rights. All the official foresters are graduates of these schools, and they also serve an apprenticeship in the care and management of forests before they are entrusted with full forestry responsibilities.

These forestry laws and schools have been instrumental in preserving and increasing the forests of Europe. There for the past fifty years the forest acreage has been gradually increasing, until in many places one-fourth of the surface of the earth is covered by woods; while here there has been a constant and rapid decrease in our woodland area. Our census statistics show that some four million acres of

woodland disappear in this country every year, and that at the present rate of consumption our marketable lumber supply will be exhausted in fifty years.

It is not likely that the American people will allow their lumber supply to be entirely exhausted before they take some measures to check the wasteful destruction of their timber land; and then, too, the demand will grow less in the advancing years, as stone, brick, iron, and steel will undoubtedly take the place of wood to a large extent in the construction of buildings.

Nevertheless, for many years to come, the demand for lumber in this prosperous and growing country will be great; and unless something is done to preserve our forests, they will be cut off too rapidly for the best interests of the country. Already our rivers and creeks are dwindling in size, our summers are becoming drier, and our water supplies more difficult to obtain, and our manufacturing industries are compelled to resort more and more to steam and reservoirs for power to turn the wheels of their machinery.

These things are directing our attention to a more careful consideration of the uses and advantages of forests. Their existence and development are now recognized as important in the material world as money in the economic world. Their influence upon the climate and atmosphere is immense, though of such a quiet nature that it generally escapes our observation. They are reservoirs of water from which the atmosphere above and the ground below are constantly drawing moisture, and thereby the climate is made more equable and humid. They serve the double purpose,—of windmills to pump the water in the soil up into the atmosphere, when it is dispersed; and to retain it in the soil by their roots and their leafy moulds, where it is allowed to pass off gradually into the springs and brooks. It is one of the wonderful provisions of nature that every growing tree helps to purify the air we breathe. Vegetation lives and thrives on the carbonic acid and other ingredients in the atmosphere which are poisonous and injurious to animal life, and it has the happy faculty of working over these poisons and issuing in the place thereof pure oxygen, which is the most life-giving food for man and beast. When impure air passes through a forest, it comes out purer, if not wholly purified. In Italy and other places, towns which formerly were so unhealthy that nobody could safely live in them during certain seasons of the year, have become wholesome and pleasant places to live in owing to the planting of forests near them. And no doubt the destruction of forests has caused many places to become uninhabitable which in ancient times were the healthy and happy abodes of human beings.

A forest fertilizes and reinvigorates the earth. The roots penetrate the soil and thereby let in the air and water, while the deposit of leaves and branches enriches the ground and keeps it warm in winter and cool in summer. A hill unprotected by trees will soon lose its soil, unless frequently supplied with some fertilizing material to take the place of the soil which is washed away by every rain. And such is the renovating influence of a forest upon the soil, that a piece of worn-out land will become again virgin soil after it has been under cover of trees for a generation or two.

Trees also serve as conductors of electricity between the clouds and the earth, and cause the clouds to discharge their contents upon the earth. A thunder-cloud will pass unbroken over a barren and treeless hill, as if not deigning to notice or refresh such an unlovely thing, while it will pour down the cooling moisture of heaven, if its electricity is drawn off by a few tree conductors. It is well-known that the most fertile soil will not produce vegetable growth unless it is saturated with water either from the clouds or reservoirs; and inasmuch as the reservoirs themselves are largely supplied by rainfall, it becomes evident that an abundant rainfall is necessary for agricultural purposes in nearly all countries. Then, if trees are conducive to rainfall, they are as indispensable to man in the production of his food as in the purification of the air he breathes.

Forests are useful to the farmer, the horticulturist, and the stock-raiser. A forest, or even a cluster of trees when rightly situated, is a great protection to farm-buildings, fruit and grain fields, and pasture lands. When horses, cattle, and sheep have an opportunity, they will always seek shelter on the leeward side of trees on every cold and stormy day, and on the shady side every hot and sunshiny day. When stock is pastured out through the season, either in the East or the West, mercy as well as economy requires forest shelter for them.

Then again there is beauty as well utility in trees. They greatly enhance the beauties of a country, and no country can be beautiful in the highest degree without them. If the green hills and mountains of New England were stripped of their woods, the lovers of natural scenery and rural life would seek elsewhere the gratification of their tastes.

A lake or stream fringed with trees is more beautiful than a treeless one. A few sheltering trees wisely distributed upon a hill gives it added beauty and picturesqueness, even when its sides are verdant with green grass or covered with waving grain. Such a hill is always a beautiful object, and one which harmonizes exceedingly well

with a cultivated country round about. On the other hand, a bare and rocky hill suggests images of bleak and barren desolation, cold blasts, and parching sun. In fine, were it not for trees would there be much beauty in mountain, hill, or valley? For who can conceive of a beautiful landscape scene devoid of trees?

Now, if forests are so essential from every standpoint, what can and ought to be done for their growth and preservation? Happily in this part of the country nothing need be done for their growth except to give them a fair chance; for they spring up spontaneously, and grow with vigor in our valleys, and on our mountain and hill sides. But on the prairies of the West, where they are needed most, they have to be planted and tended for years in order to secure their growth and continuance. Under the delegated powers to the general government it is doubtful whether it has any authority to make forestry laws for the States, although it is charged with the duty "to provide for the general welfare of the United States." It has, however, without question, the right to preserve all the timber land on the public domain. There are now over three million acres in our great national parks, and about eighteen million in our national forest reservations. And intelligent measures should be taken to withdraw from the market all such public forest lands as are necessary to supply the head waters of the great lakes and rivers of the country. And efficient measures should also be taken to safely guard and suitably manage the forests belonging to the nation. The principles of forestry should be taught at West Point, or in a separate school of forestry; and the public forests and parks should be placed under the guardianship of the United States Army, or of trained foresters under the control of some department of the general government. If properly managed they could be made a source of large income to the government, and reservoirs of fertility to agricultural land, of water supply to rivers and lakes, and of health and protection to people and their domestic animals.

But while the national parks and forests are now, and will be more so in the future, of vast importance in the economy of the nation, yet under our system of government the main work of preserving and managing our forests will have to be performed by our State governments. Several of the States have already taken steps to foster the growth and preservation of their forests. Maine has enacted a good forest-fire law, and New Hampshire, New York, and Pennsylvania have established forestry commissions to examine into the condition of all forest covers, and to formulate plans and recommendation for future legislative action. By the new constitution of New York, no

more of the State forests are to be sold or exchanged. A National Forestry Association has been formed which has held several interesting and instructive conventions in different parts of the country. Many local forestry societies have also been organized which have done much in bringing about correct opinions on forestry matters. In Massachusetts the Legislature has incorporated the Trustees for Public Reservations, and in New Jersey Governor Werts, in a recent message to the Legislature of that State, recommends the appointment of a commission empowered to receive and hold any land or place they may deem to be worthy of reservation for public use. An act for a similar purpose is now pending in the New York Legislature. And thus by degrees a public opinion is being formed, which realizes that the hallowed places and the natural beauties of a country are worth preservation, and can be put to higher uses than those which are merely commercial. And in due time let us hope public opinion will become intelligent enough to warrant the enactment and enforcement of State laws allowing the confiscation of private land by eminent domain for forest reservations, or providing for the proper use and management of forests by their owners. A law requiring the owners of woodland to manage it in accordance with the principles of good forestry, may at first seem contrary to the long accepted opinions in this country and Great Britain, that the owners of land are entitled to the absolute and unlimited control of it. But in Great Britain this ancient doctrine is becoming impaired, by the enactment of laws requiring the owners of factories and buildings to provide them with fire-escapes and good sanitary arrangements; of laws allowing the courts to regulate and fix the rent of real estate between landlord and tenant; and of laws permitting municipalities to appropriate old buildings for the purpose of erecting in place thereof model tenement-houses.

And in this country the tendency of the law is to make the owner of real estate hold it as a trustee for society at large. He is not permitted to create, or allow anything like a private or a public nuisance on his premises. He is liable to have it flowed against his consent for mill or factory purposes. It may be taken from him upon fair compensation for a park or a cemetery, for a highway or a railroad, for a reservoir or a sewage farm, for a post-office or a school-house, or for some other public use.

The belief is becoming quite general that society treats one of its members very generously, when it allows him to fence in a certain portion of the earth's surface, and say to everybody, "keep off; this is

mine; I can occupy it exclusively while I live and dispose of it by will when I am dead." But when he seeks to go still further and contends that he has the right to use it in a way that is detrimental to the public good, if he sees fit so to do, he is trenching unduly upon the rights of society; for surely the earth belongs to the race rather than to individuals, and society has the right to regulate and prescribe the terms and conditions upon which individuals shall occupy certain portions of it. There is no more hardship in requiring the owners of woodland to manage it in accordance with the principles of good forestry than there is in requiring tenants of agricultural land to carry it on in accordance with the principles of good husbandry. In the long run, it would be beneficial to the owners of woodland to be compelled by law to observe rational forestry rules in its management.

It is not likely, however, that we shall have immediately State forestry laws; but it is the immediate duty of every patriotic and intelligent citizen to inculcate right sentiments on the subject, and to encourage the proper treatment of forest land. The wise treatment of woodlands is already a practical and important question. Should the cutting be clean or partial? When the trees are of a uniform size and of a species that will sprout from the root, and of a kind chiefly valuable for fuel, there would seem to be no objection to clean work; but when the trees are valuable for timber and in various stages of growth, it would seem to be better to cut out the ripe ones by degrees, in such a way as not to injure those remaining, but rather to increase their growth by giving them more room and light. If the trees are thicker than they can grow to maturity, or to a size suitable for timber, then the inferior ones should be removed, in order that the remainder may have the entire nourishment of the soil and a monopoly of the sun and air.

Forestry should be taught in colleges, and especially in the agricultural schools; and the love of trees should be instilled into every human heart. Multitudes of modern people seem to find great satisfaction in wild and grand scenes by the seashore and in the mountains, who apparently find no delight in the scenic beauty of the woods and the landscapes of their every-day life. But the true lover of nature sees beauty in the common things around him. He finds tongues in trees, and is able to read a lesson in the lily of the field, the grass on the greensward, and the leaf on the tree.

In order that people may be educated to love trees and forests, let village and rural improvement societies be multiplied; let Arbor Days be well observed and utilized; let public parks be established where the masses can find outing ground for pleasure and recreation; and let

every farmer be persuaded that he can use his rough and waste land for no better purpose than for the growth of trees. Much of our soil is unfit for pasturage or cultivation, which would raise forests, and thereby would produce something of use to coming generations. It has been said that he who makes two blades of grass grow where only one grew before is a benefactor of his race; and of all the pursuits connected with the interests of mankind, what can be the source of more true and disinterested happiness than the knowledge that one has been instrumental in changing a waste and unproductive piece of land into a scene of umbrageous and waving beauty! Cicero speaks of tree planting as the most delightful occupation of advanced life; and Sir Robert Walpole once said that among the various actions of his busy life, none had given him so much satisfaction in the performance and so much unsullied pleasure in the retrospect, as the planting with his own hands many of those magnificent trees that now form the pride of Houghton.

But I need not seek in history for testimony in behalf of tree planting, for there must be some men and women in this audience who can testify from personal experience of the joy and benefit of planting trees.

I appeal to those of you who have planted trees with your own hands and watched their growth and expansion from day to day until you have become familiar with every limb and all their varied aspects in sunny and in stormy weather, to say whether you have not already been paid a thousand times for setting them out. And as you now walk beneath their cooling shade and see their limbs swaying gracefully over surrounding objects, and their majestic heads rising to heaven, as if in supplication for blessings on the earth, do your hearts not go out towards them with a feeling of tenderness and love known only to a parent or a benefactor?

7th March, A. D. 1895.

ESSAY

BY

Dr. C. F. HODGE, Clark University, Worcester.

Theme :—Botanical Gardens.

In almost any language, savage or civilized, before the beginnings of authentic history, we have dim legends and myths of a blissful existence in garden paradises where "every tree that is pleasant to the sight and good for food" grew of its own accord, and man's work and pleasure was to tend the garden and enjoy its beauties and fruits. If only things pleasing to the eye and good for food were sole occupants of the soil, the world might be a good deal of a paradise still. At first sight this seems to be far from the case. Thistles and thorns, weeds and briars, dispute the field with roses and strawberries; and, too often, owing to man's poor tending, gain the upper hand. From this point of view the world is all a tangle of thorns and a vale of tears. Paradise is a long ways back; lost, in fact, in the irrevokable past. But is this view of nature the best after all? The world grows many things of the greatest value with no aid of man's tending. Even thistles and briars are better than drifting sands and barren rock: and to the indulgent eye of a botanist, even the most pestiferous weeds are often most "pleasing to the sight"; and I know that he would not for the world have one of them stricken utterly from his list. With proper tending, man's first appointed work, almost any plot of Mother Earth can be transformed into an Eden to any man's own taste. As human nature is now constituted, however, two things stand in the way of perfect attainment of anything very Edenic in the way of gardens. The first of these is that men nowadays are either too lazy or too busy about other things to attend to even a small piece of ground in the way Adam was instructed to do it. The other reason is that men have lost their taste for Eden. A good

smoke over a newspaper is worth more to our ordinary man than vistas of roses with all their glowing tints and fragrance. No slur is intended against either the cigar or the newspaper. If it is neither of these it is something else, some "fad" which consumes time and energy, and leaves the tending of Eden for the florist or someone else to do. If men get more satisfaction out of something else than the freshness and beauty of nature, with which he might easily surround himself, well and good. "If folks like that sort of thing, why that's the sort of thing they like"; and there's an end of it. The world may remain a pretty scraggy and barren place, in large spots, at least. Man has something more satisfying than anything that she can produce without his aid, and he is too engrossed otherwise to lend a hand. This is all very well. Each man to his taste. But there are disagreeable complications, to say the least.

When one son of Adam has followed his bent and has tended his garden; when his fruits and flowers are beginning to repay him for his labor,—the taste of some other son of Adam suffers a sudden reversion. Nothing seems to him so fair or desirable as choice flowers, or so luscious as grapes, pears and peaches. He comes around suddenly to his Edenic neighbor's point of view and begins to make his life a burden by begging and stealing, and sending his little children around to beg and steal; or, worse still, with five cents to make a weak pretence to buy the good things of Eden. "Just one flower," "only one apple"; it looks awfully stingy to refuse so innocent a request. But old-time rural ideas of above-board generosity do not apply to the conditions of life in the city. Each one person, as he or she asks for "just one," "only a few," forgets that if all such who would be inclined to ask for the "only one" were satisfied, not a single one would remain for the gardener himself. His trees, vines and bushes would be stripped as bare and barren as the gravel-pit next to his garden, or the back yards of his worthy neighbors, who profess to different tastes and higher satisfactions than those afforded by legitimate horticulture. This is a matter of the most serious import, and I have never chanced to live in a city where it demanded more speedy and vigorous treatment. Those who love their gardens and do all in their power to make their homes and grounds beautiful, are rewarded for their pains by having to fight off the gentry of other tastes; and worse than all the material loss of time and apples, is the dreadful strain on good nature and loss of patience which this state of affairs entails. To be obliged to stay at home Sundays and keep watch all other days and sit up nights in order

to stand some slight chance of gathering the fruits of intelligent culture, is more vexation of spirit than the crop is worth. Take a single case that has come within the writer's very limited acquaintance in your city. A young couple set their hearts toward the making of a home with a garden about it. A number of years of hard work and careful saving brings in enough to begin with. A lot on a fair hill on the, then, outskirts of Worcester is bought and a little house built. Not a tree or shrub graces the place, but moonlight nights, after work in the shop, you might see our friends planting trees together. While the gentry of elevated tastes are enjoying their cigars and beer, our young Adam and Eve have covered their little Eden with flowers; have planted elms and Virginia creeper; maples, apples, pears, peaches and grape-vines; and all manner of good things. As soon, however, as the trees begin to bear, the reversion of primitive tastes, which so strongly tends to bring all men back to Eden, sets in and a running fight begins. Up to the present this struggle has been going on for something over 50 years. Patience, strength and years have failed, while the Goths and Vandals have increased like the plague. Between the street and each apple tree the well-trimmed arbor-vitæ hedge, of over 40 years' growth, has been torn into ragged and unsightly holes and has been supplemented by a high barbed-wire fence. Finally, apple trees, thrifty, sound and bearing, have had to be cut down for no other reason than to give the dear old people a little peace of their lives. The pathos of this series of incidents is to me too deep for adequate expression, and would be intensified in the mind of all present did each know the couple in question. There is about them no trace of the nervous and stingy type of character which boys love to tease. They are whole-souled, kindly people, and generous of their good things to a fault. Other good people, less unselfish perhaps, but wiser in their day and generation, when I have asked them why they do not plant fruit trees, have told me that if they had fruit, their places would be overrun with boys, and that they had rather buy or go without than have the nuisance of either being overrun or keeping the vandals off.

What can this have to do with botanical gardens, do you ask? It is the very root of the whole matter. It was Adam's fault that transformed Eden into a patch of thorns and thistles, and to-day it lies solely with man to choose whether he shall live in a garden paradise or in a desert. Before we can have gardens, we must have men and boys, who are educated to know their value and respect their rights. To plant gardens before this state has been in some degree attained,

is to bring down the fiasco of Eden with the certainty and promptness with which a stone falls to the earth. And laws for proper care of the beauties of nature should certainly be vividly enough inscribed in the hearts of men to render superfluous the ghastly signs, "Keep off the Grass," "No Trespassing," "Beware the Dog."

It was my privilege to visit, during the past summer, a number of renowned gardens; places where men have done all in their power to provide everything that can minister to love of nature and beauty, and to the needs of science, and special and popular education. My purpose has been not so much to see everything contained in these gardens as to find out what sort of ideas and ideals men have been developing with regard to this most important subject; and, more than this, to discover as far as possible to what degree these gardens are fulfilling their mission of elevating taste and advancing science. A garden, like everything else that has any legitimate purpose in the world, must be for man and not man for a garden. If an institution, be it church, school, garden or factory, is constituted on the stilted ideas, false principles, or delusions of some one individual, it may drag out a painful existence for a time and do a great deal of harm; but all such things must die out and give way to things that fill the genuine needs of a healthy humanity. Nature has constituted this world a magnificent garden, with hundreds of thousands of kinds of plants and animals in it, all living in such relations to one another that the greatest amount of life and happiness possible is produced. Her endless variety is so skilfully massed and arranged that individuals or species are either not conspicuous or possess some charm and dignity. Some good man with a narrow and decided taste lays out a garden or a park. He has a penchant for some one tree or perhaps for yellow flowers. He indulges this yellow taste to such an extent that people organized on a liking for other and more subdued colors will be driven to distraction by a brief sojourn in his garden. Or a pedantic science may dominate the arrangement of a garden. Distinctions, of use in the science for certain purposes, but altogether provisional, temporary and artificial, are set up as though they actually belonged in nature. The result is a stilted, manufactured affair, with which nature or the love of nature has nothing to do.

Speaking of botanical gardens I do not wish to confine myself strictly to lines which an infant science has set up. It has been said by eminent entomologists that insects have actually called into being our highly colored and perfumed flowers. These mutual relations between plant and insect life constitute at once the most important

and fascinating chapters of both entomology and botany. But insects may become so numerous as to destroy the vegetation they are intended only to fertilize or prune. Then we must have birds and insectivorous animals to maintain the balance of nature. These in turn may become too numerous, like the sparrows of England, or the frogs of the Egyptian plagues. To keep these in check, we must have carnivorous animals. And so we have the satisfaction of finding that nature hangs together in an endless chain. Things are simplified by studying it one link at a time, and so our sciences come to have an artificial separateness which does not exist in nature and which it is well sometimes to ignore. This point of view must furnish my reasons for not adhering more strictly to the botanical feature of my theme. You could have no ideal botanical garden with nothing but plants in it, and many of its most interesting features will be found to lie in the border-land of mutual relations which subsist between animals and plants.

Come with me for a moment into a garden and see for yourselves. When we come out, we may compare observations and conclusions.

By payment of an entrance fee of a franc in the city of Antwerp, we may pass from the narrow, dirty streets and the red, burning desert of brick houses and peaked roofs, piled one on top another, into what? The change is so sudden, so unexpected, that it almost takes our breath away. It might be the gate to fairy-land, paradise, Eden, heaven. Call it anything you please. It is known as the Zoölogical Garden of Antwerp. Under the trees and roses the hot, stifling air of the city changes as by magic to softest and freshest air imaginable.

The iron gate, through which we have entered, opens into an avenue of trees and flower beds. Along one side extends a high wall, covered from top to bottom with dark-green ivy. On either side of the entire walk is a row of tropical birds in the most varied and brilliant plumage, each lightly chained to his perch. In front, the main garden opens up to view. Directly before us is an open grove with an inconspicuous band pavilion in the centre and a small café at one side. All about, under arbors and trees, are innumerable plain chairs and little tables. Beyond this grove, and scattered with apparent carelessness about the gently undulating surface of the garden, are other regular groups of trees. In and among them large animal-houses are so artfully concealed as scarcely to intrude upon the view. Beautiful fresh green lawns, with winding water-courses and tree-covered islands, enlivened with swans and all manner of water-fowl. Here

and there a most gorgeous burst of color, consisting in June chiefly of islands of roses in the dark-green foliage. In the distance, to one side, we see a rocky eminence covered with pines; and on the other side, what seems to be a snow-white mountain peak, one of the high Alps apparently, transplanted into the lowlands. We will come to that later in our round of the garden. From a grove on the left floats the music of innumerable birds, and from the other side, in the distance, swells the no less pleasing music of children's voices shouting and laughing at play. All about you seems bright and airy and free. In many directions your view wanders out into ample vistas of grove, lawn, lake and hill. Yet with every turn of the walk you find yourself in the coolest shade. Nothing in the whole effect has the slightest intimation of being set, formal, conscious, studied. Everything seems to be purely natural, "nature unadorned, adorned the most"; and yet you know that nature could not possibly in so limited a space make so many hits with never a miss. There must be magic somewhere; and gradually the realization dawns upon us that all is purest art so slyly concealed in nature as to nowhere appear to the eye.

We will not tarry in the animal-houses, although they contain the finest specimens of lions, tigers and leopards to be found anywhere short of their native haunts. The outside of the houses, however, deserves our attention. They are built of solid stone, as if to stand forever. Artificial, apparently natural, caves and grottoes can thus be made in their walls, so that each animal would seem to be lying in a den of his own selection. Almost every exposed wall is covered with ivy or climbing roses, or concealed by trees. In architecture many of the buildings are stamped with some characteristic of the style of the country in which the animals are native; and this is helped out by frescos covering exposed walls from ground to roof, giving you a view of a typical landscape of the region whence the different animals come. Thus you see in the distance the sands of the Sahara, groups of palms, the pyramids, on the horizon. You approach, and naturally enough come upon a family of giraffes and camels. All is thus in perfect harmony.

A feature of the labelling deserves a moment's notice. Each label consists of a porcelain chart of both hemispheres in bold outline, with the geographical distribution, the habitat, of each species painted upon each and burned into the plate. It makes a label, always bright and clean, giving at a glance the correct scientific and common name of each species with its home on the face of the earth. Art is said to be long. Science is even longer, if possible, and any such simple

device which can shorten and make real and vivid its necessarily long and difficult introductory chapters is worthy of consideration.

The white peak which we saw in the distance is a model of one of the high Alps in miniature, but quite large enough to escape being ridiculous and to furnish bedding.ground for an interesting collection of native alpine plants. The peak itself is built of a clean white rock to imitate the snow; and from all sides run little rivulets of clean water, forming many mossy pools and pretty waterfalls.

In no place of the size can we find so many pleasing pictures. Our view falls either upon a group of trees arranged with such consummate skill as to awaken no suspicion of art, and still the different varieties are so placed that their shades of green, silvery white or bronze, blend and form contrasts always pleasing. Each group of trees looks different and changes its entire character as you view it from different sides. There is nothing of the formal about them; neither studied variety or artificial symmetry, so distressing in French gardens and parks. If it is not one of these groves that catches the eye, it is sure to be an open, airy vista between them,—fresh green grass or water. Here, too, there is a refreshing absence of fussiness, no stars in different colored coleus, no filigree in geometrical figures, no fancy borders, no clipped hedges, no idiotic figures carved in juniper. We may well agree with Lord Bacon, when he says, "These things be but toys: you may see as good sights many times, in tarts." Green grass, water, picturesque groups of trees, need no garnishing. The effect of these is only heightened by different colors of foliage natural to the different species. And off to one side, against a dark wall of ivy, a gorgeous blaze of roses may enliven the scene without jarring upon its harmony. In fact, this perfect harmony of the whole is strongly suggestive of music, oratorio or symphony. It stands in marked contrast to the Annie Rooney jingles, Boulanger marches, or even cat concerts with which we have often been greeted in public parks and gardens elsewhere, poor hodge-podges of all manner of discordant or silly fussiness, crankism and notions, asserting themselves so clamorously that one naturally prefers walking a good ways around such a park to walking through it.

From the size of the trees we should judge that the designer of this paradise must be long since gone to his rest. He must have been a poet, artist and prophet combined. In our busy, hurried lives we are apt to think that anybody who may never have really looked at a tree in his life has good enough taste to plant our trees for us,—so far apart this way and so far apart that way, in rows and all the same kind.

The result is, that we have in fifty or one hundred years an effect, pleasing more or less perhaps, possibly actually tiresome by its artificiality and monotony. Nature in the same time and with the same expenditure of brawn might have given us a thing of beauty and a joy forever. The one who directed the planting of the Antwerp garden, possibly some reverend abbot with abundant leisure, a passionate lover of nature in general and of trees especially, and of cathedral music, must have possessed prophetic imagination to enable him to see how his trees would appear fifty, one hundred, two hundred years after his planting. In a city whose cathedral chimes have been ringing the hours and quarter-hours since prior to 1492, many such things are possible.

We next ask ourselves concerning the purposes of such a garden and their fulfilment. It evidently serves many uses. It is a breathing-space in a close and overcrowded city. It is an educational institution of the first order. Not only does it teach botany and zoölogy, but it inculcates canons of the highest taste. Do many come to gain these lessons? The grounds are full of happy looking people, whole families, from the parents and even grandparents down to the little children, all apparently enjoying the place immensely. An ample corner at the rear of the garden is evidently set apart for a children's playground, and is fitted up with a great number of swings and whirligigs, merry-go-rounds, low trapezes and turning-poles. Here we find hundreds, if not thousands, of little boys and girls, from about four to ten years of age, in a perfect ectasy of play. Close by, the laughing and screaming is almost deafening, but every tone is happy. There are collisions and tumbles, but the time is far too precious to stop and cry about them.

Full of people as the garden is, I think I am correct in saying that it is not disfigured by a single sign indicating proper conduct, and attendants are not conspicuous. Yet not even the smallest child evinces any desire to straggle off the walks, and there is not a trampled border or corner of lawn to be found in the entire place.

Financially, too, this garden is a success. It is one of the few institutions of the kind that is entirely self-supporting.

We are now ready to compare notes. The first question is, Should not every city have such a garden? At first thought, we exclaim: "By all means." Every city would derive an infinite amount of benefit socially, morally and intellectually from such an investment. It is not, however, until we begin to thread the close and dirty streets of Antwerp, see the houses built in solid blocks and piled one on the other, see people living in the peaks of the roofs like pigeons in a

loft, see the little narrow courtyards paved with stones, that the fact begins to dawn upon us that our first impression may be fundamentally wrong. Is it not too much of a good thing in a very small space? And is not the rest of the city altogether too much of a bad thing everywhere else? Given a city like Antwerp, and such a garden as I have described would do more for the salvation of its people than all its cathedrals. The people must use it as their only means of getting a breath of fresh air or a glimpse of nature. On the other hand, is it fair to ask, given a fairy garden, with the making of which the people have had nothing to do, and might not the very fact of its perfection tend to make the people careless of the ugliness of their own abodes? We are wont to congratulate ourselves that beauty is contagious. But unless the sight of it carries with it some knowledge as to how the beautiful effect is attained, and brings some impulse to put forth some effort to attain it, I doubt if this be true. Imitation and suggestion are very strong factors in the world's progress. The quickest way to clean up a squalid neighborhood is for some one in the middle of it to roll up his sleeves and make his own place shine. One after another his neighbors would catch the infection. But if an angel from heaven should come down and plant lilies and roses in one man's yard, the rest would fold their hands and await their turn, if each didn't grumble because he was not served first. Such a garden might pay expenses in Antwerp, and be a priceless boon to its people; but this is not saying that it would be equally appreciated in Worcester.

Another serious objection to such a garden, ideal as it seems, is that it is too highly spiced for every-day diet. Even lions and tigers, elephants and monkeys, are not by any means the most important things in the world; neither are the most enchanting vistas. Honey, gingerbread and pickles are all good; but if a child gets in the habit of living on them, he may lose his appetite for more essential food, grow up spindling and finally die of a broken stomach. The same is true of intellectual health and life. If interest is too much stimulated and indulged in the rare and strange, there is danger that it be lost for the great common things that really are most deeply and perennially interesting, and that touch our lives most closely on every side. In planning a garden, we must therefore take the above facts of human nature, and many others, into full account. And when we do this, we shall probably all agree that we would not exchange Worcester, with its garden-plats, fruit trees and lawns, for the ancient city of Antwerp, with its narrow, dirty streets and stone-paved courts and

its magnificent garden. Possibly we might agree further, that it would be better for the good people of Worcester to spend a good share of their time loafing and puttering about under their own vines and fig trees than in passively admiring even the best garden in the world.

Upon a still further point with reference to public gardens, I can scarcely hope for agreement from anyone. But I have thought best to present to you a plan of a garden as it has forced itself in my own mind, together with some of the considerations and reasons upon which it is based.

Besides its private gardens and public parks, every city needs a special garden for the popular and scientific education. It should afford a method, as easy and as free as possible from the dryness and technicality of the books and schools, by which any intelligent man, woman or child may gain a living, actual acquaintance with the common forms of life about them. I know a cold shudder creeps over almost every one at the mere mention of the words "education," "science." Ghastly visions of the endless weariness, the everlasting humdrum, the unnecessary tyranny of our school and college days, arise before us at their mere mention. The "knowledge" that was stuffed into us, like scrap meat into a sausage skin, is gone and we are glad for its departure. Of what value are gardens for this "education," this "science"? To those who have never felt the difference between learning and cramming it will be impossible to explain. To those who have, no explanation is necessary.

It is now nearly two and a quarter centuries since John Milton wrote his "Tractate on Education," and still the differences between living education and dead knowledge grinding, which he so clearly outlined, have made little enough progress in soaking through the ossified strata of the human skull. Even now committees of ten and committees of fifteen are cracking their brains to devise cramming machines, and with never a thought that just such methods and devices have been for centuries bursting almost all the poor, little sausage skins and spilling all the sausage. Along this line Milton wrote, in 1673, as follows:—

"And for the usual method of teaching the Arts, I deem it be an old errour of Universities not yet well recovered from the Scholastick grossness of barborous ages, that in stead of beginning with Arts most easie, and those be such as are most obvious to the sence, they present their young unmatriculated Novices at first comming with the most intellective abstractions of Logick and Metaphysicks; So that they having but newly left those Grammatick flats and shallows where they

stuck unreasonably to learn a few words with lamentable construction, and now on the sudden transported under another climate to be tossed and turmoil'd with their unballasted wits in fathomless and unquiet deeps of controversie, do for the most part grow into hatred and contempt of Learning, mocked and deluded all this while with ragged Notions and Babblements, while they expected worthy and delightful knowledge." These Milton gives among the reasons why the best youth of his day turned their backs upon high attainment in learning, and went their several ways, "ignorantly zealous," into the profession of theology; avaricious and carping, for they have never been taught "the heavenly contemplation of justice and equity," into the law; "hollow and unprincipl'd" into the pursuit of politics; or the wisest and best of all, since nothing better was presented to them in their education, spend their days in "ease and luxury," "feast and jollity." "And these," he says, "are the fruits of mispending our prime youth at the Schools and Universities as we do, either in learning meer words or such things chiefly, as were better unlearnt."

More especially toward the line of our botanical garden Milton goes on: "I shall not detain you longer in the demonstration of what we should not do, but strait conduct ye to a hill-side, where I will point ye out the right path of a vertuous and noble Education; laborious indeed at the first ascent, but else so smooth, so green, so full of goodly prospect and melodious sounds on every side, that the harp of Orpheus was not more charming. I doubt not but ye shall have more adoe to drive our dullest and laziest youth, out stocks and stubbs from the infinite desire of such a happy nurture, than we have now to hale and drag our choicest and hopefullest Wits to that asinine feast of sowthistles and brambles which is commonly set before them, as all the food and entertainment of their tenderest and most docible age. I call, therefore, a compleat and generous Education that which fits a man to perform justly, skillfully and magnanimously all the offices both private and publick of Peace and War."

War does not cut the figure it did two hundred years ago; but, on the other hand, the "offices of peace" have multiplied and might furnish men with occupations as absorbing and interesting, if they were educated to take hold of them. The books and schools do not afford the kind of education that opens to men the living world,—the world of reality; in such wise that they see its important problems and are given some idea of ways and means of grappling with them, and some hope of their solution. I would have a garden designed to do this. It would not infringe in the least upon our experiment stations;

but would supply them with youth, those whose inclinations lead them that way, who had faced the problems as they exist in living nature, who have formed some reasonable notion of their exteme difficulty and who have come to an intelligent determination to solve them. Not many would elect to follow out lines of special investigation; but a good square look at nature fairly in the face will benefit all, and after taking it they must go their several ways with some respect at least for her laws. Those artistically inclined will find and be inspired by beauties of which they have not dreamed. The philanthropic, the practical, the scientific, will find problems, the value of whose solution cannot be reckoned in thousands or even in millions of dollars.

The details of a garden that shall be calculated to do this will not detain us long. I have failed to find exactly my ideal in any of the gardens of the Old World that I have been able to visit. Farthest from it is the great botanical of Paris, the Jardin de Plantes. The strictly botanical part of it is a large, rectangular field, enclosed in an iron fence. Here a "dry as dust," artificial and superficial science has had iron sway. The field is as flat as a table, and as rectangular. It is laid out in rectangular walks and small rectangular beds. Each bed is supposed to contain a single species of plant, and related species and genera stand close together. For man, this is the easiest possible arrangement. It is like the arrangement of cards in a card catalogue. But not by any means is this the easiest for the plants. Their wishes have been altogether ignored. Not one in a hundred has the conditions under which it would best grow in nature; and as a result they are spindling and sickly, the great majority of them. It is a fitting criticism upon such a superficial science, that in the midst of a teeming city, this entire enclosure, where science has endeavored to make all out-doors as formal and forbidding as possible, is as empty of life as a Death Valley. It would seem that even the sparrows avoid it; and for at least one fine afternoon in early September this entire enclosure was monopolized by two lone pilgrims from across the sea. I could not imagine anyone going in there of his own free will and accord.

Many of the botanical gardens attached to the German universities are vast improvements upon the Paris Jardins de Plantes from an artistic standpoint. In general, however, the chief design in these gardens is to serve technical and special purposes of university students; and the general public does not crave the admission that is denied it.

We should not neglect to mention that nearly every German city,

and even towns, have well-kept parks; and what is much more appreciated and indulged in by the people than even the parks, large tracts of apparently primeval forest. Aside from the well-made and gracefully designed walks in these forests, nature has full and absolute sway. And no truer testimony to man's primitive love of pure nature could be given than the solid streams of people, flowing out after the work of the day from the sultry city into these forest walks. In our garden we must have the natural forest.

Time fails me in which to even mention briefly the Royal Gardens at Kew, near London, and also some gardens in our own country that rank among the finest in the world; notably the Missouri Botanical Garden, the botanical garden at Cambridge, and others. Their very magnificence places them beyond us; and the enormous expense of their maintenance, for the Missouri garden nearly $100,000 a year, enforces a realization of the fact that a country can afford but a few of such great institutions.

I will ask you to consider with me for a moment the charms and advantages of an altogether different kind of garden. Suppose we had a tract of land just as God and nature made and planted it. Within reasonable limits, the smaller it is the better, so that it contain a sample, if possible, of all the kinds of soil and slopes of "Glade and Mead," and exposures to be found in, we will say, Worcester County. It should have a bit of river, a pond, a bog, a grassy meadow, hillside slopes,—north, south, east and west,—caves and rocks and springs. It should be as near the city as possible and readily accessible to all; and we will suppose that it is covered with vegetation and peopled with animals, from microscopic infusoria to American Indians, just as it was before the Mayflower landed. What lessons would such a plot teach us? In the first place we would have its geology from the Archean rocks through the Glacial drifts to the flint arrow-heads of the Age of Man. We have also the native animals, each in its chosen nest or pool or hole or den or covert. These all will help to complete the endless chain of nature, animate and inanimate, which our sciences are so prone to break into fragments, but which must retain its entirety, if life is to survive. But passing specially to the botanical side, what do the trees and plants teach us as they stand in their natural places? Each kind, from the lichen on the rock to the pine and the oak, would tell us, did we but care to read its story, of geological ages of unremitting struggle. And each would tell us, did we but study its constitution aright, exactly what weapons and cunning it has used; just what chemical and physical

forces it has taken advantage of,—to maintain its struggle for life in exactly the place we now find it. Are these lessons of no value? We clear off this garden as if they were not. And it is only when man plants in its place the things he desires to grow, and sees that his peaches turn yellow, his wheat turns black, his apple trees rust and so on; only when the things of his planting are swept from the face of the earth,—does man realize that it is well worth his while to study the ways and means that nature has found necessary for the maintenance of her various forms. The very first thing we must realize in this great study is that the problems are far too vast and complicated for a narrow and selfish utilitarian spirit to grapple. The commercial spirit may see that to know something about wheat-rust may be worth $200,000,000 a year to this country, or to know something about diphtheria or consumption may save thousands of valuable lives. What of that? it replies. We can't find out these things and we know there is money in this thing or that which we can do, and that is the end of it. To deal with these problems, the broadest view that the highest university education can give is clearly necessary to give a sound basis for thinking out and reasoning out these problems. They are difficult. They can not be solved at will or at dictation, in one week or in one year. There must be a broad knowledge, and behind this a spirit entirely above the commercial; a spirit that knows no discouragement, in whose dictionary there are no "can'ts"; the spirit of the mountain climber who overcomes all difficulties, and the harder the climb the better he likes it. When we have a public education that produces such spirits, we may hope to have the question of peach yellows and consumption and the like cleared up once for all, instead of frantically jumping up and down in the same place year after year.

I do not mean that it would convert Worcester into an agricultural or horticultural experiment station. There is no danger of that. I would strive to so present the great facts of botany and other natural sciences in such wise that everybody would learn and appreciate the enormous value attending the solution of these problems and gain a fair estimation of their difficulty; and now and then some one might step forward with the means to forward the good work or with the knowledge, ability and will to solve some particular problem. As one means of developing such a state of mind, a proper educational garden must prove most efficient.

No such primitive garden as I have described exists in this vicinity at least. The land has been cut over and burned over and ploughed

over, and numerous new foreign species have been introduced. Many of the fragments, however, still exist; and these might be gathered, and so planted and arranged as to become, year after year, of greater and greater practical value for the enjoyment and education of the city. The trees should be planted so as to show their characteristic forms of growth, both in the close forest and in the open glade; and the garden could thus be given both the charm of the forest and the beauty of grouping that we found in the garden of Antwerp. Each tree, shrub and herb should be given as nearly as possible just the sort of ground and location and surroundings that it would choose for itself in its native haunts. Of course this would conflict somewhat with the grouping together of related species and genera. These should, as far as possible, be grouped naturally together for easy comparison, and each should be plainly labelled. A generous compromise between the demands of a rigid science and those of art and nature will conduce to the real good of the whole.

Does it pay to teach botany and zoölogy in the schools? If it does, why either stuff it in or dole it out in desiccated book cultures and homœopathic doses? thereby making all who are treated immune from botany or zoölogy for the rest of their lives. The real thing taken in full strength, "straight," and plenty of it, is what we need. Let the children live in actual botany, go on a botanical drunk, if you please, for a week at a time. They never could altogether forget or utterly despise their botany after even one such bout. Take the time, when as Milton says, "In those vernal seasons of the year, when the air is calm and pleasant, it were an injury and sullenness against nature not to go out, and see her riches, and partake in her rejoicings with heaven and earth." How many days of "injury and sullenness" can we not recall, cooped up in a dusty school-room through the rare days of June or October.

Who should plant and care for this garden, do you ask? Under proper direction, let the school-children themselves take a liberal share in it. The one thousand species of plants in Worcester County would step into place as though the "Brownies" were at work. And you could rest assured that no child who has put forth real effort in its behalf, who has scoured the hills for some rare plant and set it out in the kind of place he found it growing in, will ever raise his hand to injure any specimen in the garden.

For the sake of science and general culture, I should wish to have the native flora attended to first. After this the claims of horticulture, strictly speaking, might be considered. Worcester has too

many others better able than myself to present her claims. Nothing is more beautiful than trees covered with fruit. And a public Fruticetum would be a means of exhibiting fruit at its best, and of stimulating culture. This might be added to our garden when public morality has reached such a point that every child over six years of age shall be too thoroughly grounded in principle to steal, even under severe temptation, and be imbued with too much self-respect to beg under any circumstances.

14th March, A. D. 1895.

ESSAY

BY

PROFESSOR E. HARLOW RUSSELL,

STATE NORMAL SCHOOL, WORCESTER, MASS.

Theme:—Animal Intelligence.

WHEN we apply ourselves to the study of the orders of lower animal life, I think we are impressed with two things. First, the prodigious number and variety of forms in which animal life is seen upon this earth. There is an enormous range and variety in the structure of the animal world. Then, again, comes the correspondingly great range of what we may call intelligence, or something which, by a stretching of the definition, may be termed that. It ranges from what we may call zero, where the animal life is hardly more than that found in the vegetable, through our domestic animals, as the cat and dog, up to the monkey and ape, which approach most nearly our own structure and our own intelligence. Then there are forms of life that have a great amount of intelligence, only of a different variety. In this class we include the ant, bee and wasp. I believe that it is a fact that no less than eighty thousand kinds of beetles have been described, classified and catalogued, and yet the insect world has not been at all thoroughly canvassed.

In comparing the intelligence of animals and men, we cannot avoid comparison as regards the higher animals, there are so many points that are analogous; and when it comes to intelligence they accord with us in a great many respects. You well know how savages look upon animals. In many cases they exalt them above men and maintain that they derive their family descent from certain lines. There is undoubtedly a fixed belief on the part of Indians and savages that souls of men pass and repass between animals and men as a sort of retribution for sins committed during life.

Our great tendency is to read into the minds of animals and test them by our own minds. And this is even so when it comes to scientific men,—those who have made the subject a life-long study. There are two great schools of naturalists,—those who believe in the intelligence of animals and those who disbelieve. They are constantly and continually charging each other with humanizing them on the one hand and shutting it off on the other. We must have some test of what we call animal intelligence, and without going into the thing from a scientific standpoint I have fixed the test to be something like this: When an animal forms within itself an immaterial representation of an external fact and acts upon it, then I say that animal manifests intelligence.

As an illustration of this point, allow me to tell a story that I think will thoroughly explain my definition. An English naturalist placed a pike, one of the most stupid of fish, in a glass tank and separated him from a number of other smaller fishes which, if at liberty, would have furnished him with food. No sooner had he been placed in the tank than he made a dive for one of the smaller fishes, but only to be nearly stunned by swimming with such force against the glass, which he did not discern. This continued for nearly three months, but at last the pike had learned caution and did not attempt to get at the other fish. Even when the partition was taken away, the fish showed no desire to attack what would naturally have been his prey. That pike did not do as he wanted to, but checked his own natural action by a mental picture of what he had undergone in the past. Whenever an animal has mental representation rather than present desire, I call the animal intelligent.

It is hard to say where instinct leaves off and reason commences. Instinct has certain marks and peculiarities, and it is pretty evenly divided among animals of the same species. Intelligence on the other hand varies considerably. Instinct is mechanical; it works by a kind of impulse for an end that the animal does not appear to foresee. Reason is self-conscious. There is not the distinctness between the two that we used to think. Instinct always has in it a little dose of reason. Instinct is not blind, neither is it invariable. There is an abundance of evidence to show that surroundings have much to do with instinct.

I have in a ragged sort of way said that you cannot separate instinct from reason, and between them there is a constant interplay. They are so closely connected that they breed together and the offspring is what we call common-sense.

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OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1894-95.

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ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
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SCHEDULE OF PREMIUMS

OFFERED BY THE

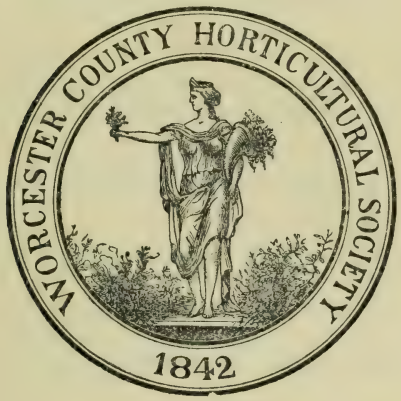
WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR

1895.

The attention of Exhibitors is particularly called to the Rules and Regulations, General and Special.



Worcester, Mass.
CHARLES HAMILTON, PRINTER,
311 MAIN STREET.
1895.

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ON
ARRANGEMENTS AND EXHIBITIONS.

JAMES DRAPER, *Chairman.*

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FREDERICK A. BLAKE,
EDWARD HALL,
MRS. F. H. MERRIFIELD.

FRUITS, &C.

JAMES DRAPER,
O. B. HADWEN,
GEORGE C. RICE.

VEGETABLES.

CHARLES GREENWOOD,
CALVIN L. HARTSHORN,
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FRUITS, ETC.—James Draper.
VEGETABLES, ETC.—Charles Greenwood.

COMMITTEE ON NOMENCLATURE.

James F. Allen,
Hermann F. A. Lange,
George E. Francis,
O. B. Hadwen,
James Draper,
Charles Greenwood,
F. M. Marble,
Edward W. Lincoln.

GENERAL RULES FOR ALL EXHIBITIONS.

A. Strict conformity to the Regulations and Rules will be expected and required, as well for the benefit of Exhibitors as for the convenience of the Officers of the Society.

B. Correct and legible names must be attached to each and every Flower or Plant entered in a class of named varieties.

C. All articles offered for premium must remain within the Hall throughout the hours of Exhibition, unless special permission for their removal shall be granted by the Committee on Exhibitions, etc.

D. All *Small Fruits* must be entered in boxes or baskets (except in the case of Strawberries or Currants, which are to be shown "*flat*") ; but they may be displayed subsequently in plates or dishes, at the taste of the exhibitor.

E. No person shall take more than one premium, under the same number.

F. The Judges may correct, before the close of any Exhibition, awards made by them, if satisfied that such were erroneous.

G. The cards of competitors shall be put, reversed, beneath the plates ; and the Judges of Award shall be excluded from the Hall of Exhibition until the Exhibition itself is ready for judgment.

H. Competitors are expected to conform strictly to the conditions under which articles are invited. Evasion or violation of them may be reported to the TRUSTEES for future disqualification of the offender.

RULES AND REGULATIONS.

1. Exhibitions will be held on Thursday, March 7, April 11, and May 9. Commencing June 6 there will be Exhibitions every Thursday, excepting July 4, until and including October 24, A. D. 1895. The hours of Exhibition will be between 3 and 4.30 o'clock. Articles offered for premium must be in the Hall by 2.15 o'clock P. M. of the days of Exhibition. Between 2.15 and 3 o'clock the Hall will be in exclusive charge of the Secretary and the Janitor, who will allow no one else to be present. The Judges of Award may be admitted under the limitations of GENERAL RULE G.

2. Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are

not members of the Society; and it is strictly required that all specimens offered for premium shall have been grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least two (2) months previous to the date of exhibition.

3. After the articles are arranged they will be under the exclusive charge of the Judges, and *not even the owners* will have liberty to *remove* them until the exhibition is closed; when they will be delivered as the contributors may direct.

4. No cards of a business nature will be allowed in any exhibition.

5. Where a certain number or quantity of Plants, Flowers, Fruits or Vegetables is designated in the schedule, there must be neither more nor less than that number or quantity of specimens shown; and in no case can any other varieties than those named in the schedule be substituted.

6. It will be the duty of the Judges to *exclude from competition all inferior specimens.* Also, all such *Designs* as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making Awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

7. The Committee on Arrangements have power to change the time of exhibition for any article, if an earlier or later season renders such change necessary; and the Secretary is requested to give notice of one week, in some daily paper, and also at the preceding exhibition, when a change in the Schedule is proposed.

8. All articles offered for premium must be correctly named. Indefinite appellations, such as "Pippin," "Sweeting," "Greening," etc., will not be considered as names. Any person exhibiting the same variety of Fruit or Vegetable, under different names, or exhibiting as grown by himself, Flowers, Fruit or Vegetables grown by another, thereby violating the objects and rules of the Society, shall be debarred from competing for the Society's premiums until reinstated.

9. No Flowers, Plants, Fruits or Vegetables will be entitled to a premium unless they possess points of superiority; and the Judges are *strictly required* to withhold premiums if, in their opinion, the articles exhibited do not merit them; nor shall any specimen for which a premium has been once awarded, receive another during the season.

10. Competitors will be required to furnish information as to their mode of cultivation, and to present specimens, for trial and examination, if requested.

11. In all exhibitions of Cut Flowers, for competition, the use of foliage must be restricted to that of the varieties shown; and not more than three blooms, clusters, sprays or spikes, all which shall be of one color, and of one variety, shall be allowed in the same bottle, or vase, except when otherwise specified in the schedule.

12. No Judge shall award a premium or gratuity in any case wherein he is a competitor, or has an actual or resultant interest; in any such case the judgment shall be rendered by any three of the Committee on Arrangements and Exhibitions whom the Judge shall invite.

13. No Judge shall require anything of competitors respecting their exhibits, which is not distinctly specified in the schedule. No Flowers, Fruits, etc., etc., shall be put on the tables, for competition for premiums, by any person who is a judge as to the awards to be made for Fruits, Flowers, etc., etc.

14. The standard number required for an exhibit, whether of Fruits or Vegetables, will be twelve (12); unless otherwise specifically declared. The usual limit of measure, save for SMALL FRUITS, will be a half-peck.

15. All premiums that are not claimed within three months after the close of the official year shall be forfeited to the Society.

16. The awards will be made known as soon as the cards can be filled out and placed upon the tables.

17. "Downing's Fruits of America," revised edition, will guide the Judge of Fruits in his decisions upon matters at issue.

☞The judges are authorized by the Trustees, to invite the assistance of competent and discreet persons in the discharge of their duties.

FLOWERS, PLANTS, FRUITS & VEGETABLES.

A. D. 1895.

☞ The Committee on Arrangements and Exhibitions would direct the earnest attention of the Judges to *Rule 6!*

6. *It will be the duty of the Judges to exclude from competition all inferior specimens. Also, all such designs, as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.*

Special Rule.—Exhibitors will add value to their exhibits by having all specimens correctly and legibly named. Notice of which will be taken by the Judge in awarding the premiums.

Thursday, March 7.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

HYACINTH,—in bloom.—					
No. 1.	One plant, two premiums			$1 00	50
No. 2.	Six plants, four premiums	3 00	2 00	1 00	50
PRIMULA SINENSIS,—in bloom.—					
No. 3.	Four plants, four premiums	3 00	2 00	1 00	50
No. 4.	One plant, two premiums			1 00	50
PRIMULA,—any other variety, in bloom.—					
No. 5.	Four plants, four premiums	3 00	2 00	1 00	50
CINERARIA,—in bloom.—					
No. 6.	Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
CYCLAMEN,—in bloom.—					
No. 7.	Four plants, four premiums	3 00	2 00	1 00	50
No. 8.	One plant, three premiums		1 50	1 00	50
CARNATION.—					
No. 9.	Cut blooms, with foliage. Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

ARUM (RICHARDIA),—IN BLOOM.—

No. 10.	Best collection; grown in a pot, or tub, not exceeding 16 in. in diameter, four premiums	3 00	2 00	1 00	50

AZALEA INDICA,—IN BLOOM.—

No. 11.	One plant, two premiums			3 00	2 00
No. 12.	Three plants, four premiums	5 00	3 00	2 00	1 00

CUT FLOWERS.—

No. 13.	Not to exceed twenty blooms (clusters, sprays or spikes in vases), four premiums	3 00	2 00	1 00	50

APPLE.—

No. 14. Any variety, named, gratuity.

PEAR.—

No. 15. Any variety, named, gratuity.

VEGETABLE.—

CABBAGE,

No. 16.	Brunswick, 3 specimens, three premiums	$1 50	1 00	50	
No. 17.	Red, 3 specimens, three premiums	1 50	1 00	50	
No. 18.	Savoy, 3 specimens, three premiums	1 50	1 00	50	

CELERY,

No. 19.	Six specimens, three premiums	1 50	1 00	50	

SQUASH, ANY VARIETY,

No. 20.	Three specimens, four premiums	$2 00	1 50	1 00	50

TURNIP,

No. 21.	Swede, Yellow, 6 specimens, three premiums	1 50	1 00	50	
No. 22.	Swede, White, 6 specimens, three premiums	1 50	1 00	50	
No. 23.	White Egg, 12 specimens, three premiums	1 50	1 00	50	

BEET,

No. 24.	Turnip, three premiums	1 50	1 00	50	

CARROT,

No. 25.	Intermediate, three premiums	1 50	1 00	50	

LETTUCE,

No. 26.	Six heads, three premiums	2 00	1 50	1 00	

Thursday, April 11.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS—BASKET.—

No. 27. No restrictions, four premiums.... $3 00 2 00 1 00 50

ZONALE GERANIUM,—in bloom.—

No. 28. Four plants, distinct in color, four premiums..... 3 00 2 00 1 00 50

CUT FLOWERS,—not to exceed 20 vases.—

No. 29. Not to exceed 5 blooms, clusters, sprays or spikes in each, four premiums 3 00 2 00 1 00 50

HYACINTH,—in bloom.—

No. 30. Twelve plants, not less than 6 varieties, four premiums..... 4 00 3 00 2 00 1 00

NARCISSUS,—not to exceed 24 vases.

No. 31. Four premiums..... 3 00 2 00 1 50 1 00

TULIP.—

No. 32. Four pots or pans, not to exceed 12 bulbs in each, not less than three varieties, four premiums. 3 00 2 00 1 50 1 00

APPLE.—

No. 33. Any variety, named, gratuity.

PEAR.—

No. 34. Any variety, named, gratuity.

VEGETABLE.—

Horse Radish,

No. 35. Two premiums..... 1 00 50

Parsnep,

No. 36. (Hollow Crown), three premiums.... ... 1 50 1 00 50

No. 37. (Student), three premiums..... ... 1 50 1 00 50

Radish,

No. 38. Two bunches (6 in each bunch), three premiums 1 50 1 00 50

SALSIFY,

No. 39. Three premiums 1 50 1 00 50

LETTUCE,

No. 40. Six heads, four premiums 2 00 1 50 1 00 50

RHUBARB,

No. 41. Same variety, three premiums 1 50 1 00 50

DANDELION (cultivated),

No. 42. One-half peck, three premiums 1 50 1 00 50

SPINACH,

No. 43. One-half peck, three premiums 1 50 1 00 50

Thursday, May 9.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at* $3\frac{1}{2}$ *o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

PANSY,—WITH FOLIAGE.—

No. 44. Not to exceed 35 vases, one stem in a vase, four premiums $3 00 2 00 1 00 50

HYACINTH,—OPEN CULTURE.—

No. 35. Not to exceed 24 vases, one spike in each, four premiums 3 00 2 00 1 00 50

PELARGONIUM—(FANCY AND SHOW)—IN BLOOM.—

No. 46. Four plants, of distinct varieties, three premiums 3 00 2 00 1 00

TULIP,—OPEN CULTURE.—

No. 47. Display, not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 48. Not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

No. 49. BASKET, — NO RESTRICTIONS, four premiums 3 00 2 00 1 00 50

AZALEA—(MOLLIS).—

No. 50. For the best display in vases, four premiums 3 00 2 00 1 00 50

VEGETABLE.—

ASPARAGUS,

No. 51. Two bunches, three premiums $1 50 1 00 50

DANDELION,—

No. 52. Cultivated, half-peck, three premiums.... 1 50 1 00 50

ONION,

No. 53. Two bunches, six in each bunch, three premiums..... 1 50 1 00 50

RADISH,

No. 54. Two bunches, six in each bunch, three premiums 1 50 1 00 50

RHUBARB,

No. 55. Linnæus, three premiums 1 50 1 00 50

No. 56. Victoria, three premiums..... 1 50 1 00 50

SPINACH,

No. 57. Half-peck, three premiums 1 50 1 00 50

Thursday, June 6.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 58. Not to exceed 30 vases, four premiums.....$3 00 2 00 1 00 50

No. 59. ONE VASE,—The specimens not to be tied or wired, three premiums 2 00 1 00 50

NATIVE FLOWERS.—

No. 60. In vases, no duplicates, five premiums..... 3 00 2 00 1 50 1 00 50

PANSY.—

No. 61. Six plants in bloom, distinct in color, exhibited in pots, four premiums 3 00 2 00 1 00 50

BEGONIA,—IN BLOOM.—

No. 62. One plant, three premiums 2 00 1 00 50

IRIS.—

No. 63. Not to exceed 10 vases, four premiums 2 00 1 50 1 00 50

FUCHSIA,—DISTINCT VARIETIES.—

No. 64. Four plants in bloom, four premiums..... 3 00 2 00 1 00 50

RHODODENDRON.—

No. 65. Display, in vases, four premiums..	3 00	2 00	1 00	50

AZALEA,—GHENT.—

No. 66. Display, in vases, four premiums..	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 67. From hardy plants and shrubs, display not to exceed 24 vases, four premiums....	3 00	2 00	1 00	50

VEGETABLE.—

ASPARAGUS,

No. 68. Two bunches, three premiums.....	$1 50	1 00	50	

BEET,

No. 69. Early, 12 specimens, three premiums...	2 00	1 50	1 00	

CUCUMBER,

No. 70. Three specimens, three premiums.....	1 50	1 00	50	

SPINACH,

No. 71. Half-peck, three premiums	1 50	1 00	50	

Thursday, June 13.

HYDRANGEA,—ONE PLANT IN BLOOM.—

No. 72. Hortensis, three premiums.....	$2 00	1 00	50	
No. 73. Otaksa, three premiums.....	2 00	1 00	50	
No. 74. Thomas Hogg, three premiums..... ..	2 00	1 00	50	

BASKET,—NO RESTRICTIONS.—

No. 75. AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 76. FLORIST,—four premiums.....	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 77. One vase, the specimens not to be tied or wired, four premiums.....	2 00	1 50	1 00	50

STRAWBERRY.—

No. 78. Any variety, not scheduled, gratuity.

VEGETABLE.—

PEA,

No. 79. One-half peck, four premiums.....	$2 00	1 50	1 00	50

LETTUCE,

No. 80. Six heads, three premiums.....	1 50	1 00	50	

Thursday, June 20.

☞ This exhibition will be open to the public from 3 P. M. until 5.30 P. M.

ROSE.—

[To be Shown in the Vases of the Society.]

No. 81.	Best twelve blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums	$4 00	3 00	2 00	1 00
No. 82.	For the best six blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums	3 00	2 00	1 00	50
No. 83.	Display, not to exceed 30 vases, one bloom or cluster in each, five premiums,	4 00	3 00	2 00	1 50	1 00
No. 84.	For the best basket of Roses, three premiums		2 00	1 00	50
No. 85.	Moss Roses. Display in vases, not less than six varieties, three premiums		2 00	1 00	50

PŒONIA.—

No. 86.	Not to exceed 20 vases, one flower in each, four premiums	2 00	1 50	1 00	50

STRAWBERRY.—

No. 87.	Bubach, 24 berries, flat, three premiums	$1 50	1 00	50	
No. 88.	Charles Downing, 24 berries, flat, four premiums	2 00	1 50	1 00	50
No. 89.	Crescent, 24 berries, flat, three premiums	1 50	1 00	50	
No. 90.	Haviland, 24 berries, flat, three premiums	1 50	1 00	50	
No. 91.	Sharpless, 24 berries, flat, four premiums	2 00	1 50	1 00	50
No. 92.	Other varieties, not scheduled, 24 berries, flat, gratuity.				

VEGETABLE.—

Pea,

No. 93.	Any variety, named, one-half peck, four premiums	$2 00	1 50	1 00	50

Thursday, June 27.

CUT FLOWERS.—

No. 94. Display, not to exceed 24 vases (no duplicates), five premiums $3 00 2 00 1 50 1 00 50

CAMPANULA MEDIA.—(Canterbury Bell).

No. 95. Display, not to exceed 24 vases, three premiums 2 00 1 00 50

DIANTHUS BARBATUS.—(Sweet William).

No. 96. Display, not to exceed 40 vases, one truss in a vase, four premiums... 3 00 2 00 1 00 50

No. 97. Display of H. P. Roses, not to exceed 24 vases, one bloom or cluster in each, four premiums. 3 00 2 00 1 50 1 00

STRAWBERRY.—

No. 98. Belmont, 24 berries, flat, three premiums. 1 50 1 00 50

No. 99. Leader, 24 berries, flat, three premiums. 1 50 1 00 50

No. 100. Marshall, 24 berries, flat, three premiums. 1 50 1 00 50

No. 101. Miner, 24 berries, flat, three premiums.. 1 50 1 00 50

No. 102. Parker Earle, 24 berries, flat, three premiums 1 50 1 00 50

No. 103. Other varieties, not scheduled, 24 berries, flat, gratuity.

CHERRY.—

No. 104. Coe's Transparent, one quart, three premiums $1 50 1 00 50

No. 105. Gov. Wood, one quart, three premiums. 1 50 1 00 50

No. 106. Other varieties, not scheduled, gratuities.

VEGETABLE.—

Beet,

No. 107. Turnip rooted, 12 specimens, three premiums $1 50 1 00 50

Pea,

No. 108. McLean's Advancer, one-half peck, four premiums..... 2 00 1 50 1 00 50

Thursday, July 11.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at* $3\frac{1}{2}$ *o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ZONALE GERANIUM,—IN VASES.—

No. 109.	Display, not to exceed 24 vases, one truss in a vase, four premiums	$3 00	2 00	1 00	50
No. 110.	LILIUM CANDIDUM. Twelve spikes with pollen, four premiums	3 00	2 00	1 50	1 00

GLOXINIA,—DISTINCT.—

No. 111.	Four plants in bloom, four premiums	3 00	2 00	1 00	50

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 112.	Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

IRIS KÆMPFERI.—

No. 113.	Not to exceed 20 vases, one spike in each, four premiums	3 00	2 00	1 00	50

RASPBERRY.—

No. 114.	Cuthbert, one quart, three premiums		1 50	1 00	50
No. 115.	Turner, one quart, three premiums		1 50	1 00	50
No. 116.	Other varieties, not scheduled, gratuity.				

BLACKCAP,

No. 117.	Gregg, one quart, two premiums			1 00	50
No. 118.	Mammoth Cluster, one quart, two premiums			1 00	50
No. 119.	Souhegan, one quart, two premiums			1 00	50
No. 120.	Other varieties, not scheduled, gratuity.				

CHERRY.—

No. 121.	Black Eagle, one quart, three premiums		1 50	1 00	50
No. 122.	Black Tartarian, one quart, three premiums		1 50	1 00	50
No. 123.	Downer's Late Red, one quart, three premiums		1 50	1 00	50
No. 124.	Elton, one quart, three premiums		1 50	1 00	50

STRAWBERRY.—

No. 125. Any variety, 24 berries, flat, gratuity.

VEGETABLE.—

PEA,

No. 126.	Champion of England, three premiums	$2 00	1 50	1 00	
No. 127.	Stratagem, three premiums	2 00	1 50	1 00	
No. 128.	Yorkshire Hero, three premiums	2 00	1 50	1 00	
No. 129.	Other varieties, not scheduled, three premiums	2 00	1 50	1 00	

CABBAGE,

No. 130.	Any variety, 3 specimens, four premiums	2 00	1 50	1 00	50

POTATO,

No. 131.	Any named variety, 12 specimens, four premiums	2 00	1 50	1 00	50

BEAN,—SNAP—one-half peck.—

No. 132.	Wax, four premiums	2 00	1 50	1 00	50
No. 133.	Green pod, four premiums	2 00	1 50	1 00	50

Thursday, July 18.

CUT FLOWERS.—

No. 134.	Display, not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50

PETUNIA.—

No. 135.	Display, not to exceed 40 vases, one spray in each vase, four premiums	3 00	2 00	1 00	50

CURRANT.—

No. 136.	Fay, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 137.	Red Dutch, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 138.	Versaillaise, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 139.	White Dutch, 24 bunches, three premiums,	1 50	1 00	50	
No. 140.	White Grape, 24 bunches, three premiums,	1 50	1 00	50	
No. 141.	Other varieties, not scheduled, gratuity.				

RASPBERRY.—

No. 142.	Brinklé's Orange, one quart, three premiums	1 50	1 00	50	
No. 143.	Any variety, not scheduled, one quart, gratuity.				

VEGETABLE.—

CABBAGE,

No. 144. Brunswick, 3 specimens, three premiums $1 50 1 00 50

No. 145. Henderson, three premiums 1 50 1 00 50

SQUASH,

No. 146. Three Summer Crookneck, three premiums 1 50 1 00 50

TOMATO,

No. 147. Any named variety, three premiums .. 2 00 1 50 1 00

Thursday, July 25.

PHLOX DRUMMONDI.—

No. 148. Display, not to exceed 30 vases, four premiums $3 00 2 00 1 00 50

HOLLYHOCK.—

No. 149. Not to exceed twenty vases, one bloom in each, four premiums.. 2 00 1 50 1 00 50

SWEET PEA,—WITH FOLIAGE.—

No. 150. Display, not to exceed 40 vases, not exceeding ten stems in a vase, five premiums 3 00 2 00 1 50 1 00 50

BLACKBERRY.—

No. 151. Agawam, one quart, three premiums.... 1 50 1 00 50

No. 152. Early Harvest, one quart, three premiums, 1 50 1 00 50

GOOSEBERRY.—

No. 153. One quart, of any named variety, gratuity.

PEAR.—

No. 154. D'Eté, three premiums $1 50 1 00 50

VEGETABLE.—

BEAN—(shell),

No. 155. Dwarf Horticultural, half-peck, three premiums $1 50 1 00 50

No. 156. Any other (named) variety, three premiums 1 50 1 00 50

CORN,

No. 157. (Sweet), four premiums 2 00 1 50 1 00 50

POTATO,—12 specimens,

No. 158. Hebron, three premiums 1 50 1 00 50

No. 159. Polaris, three premiums..... 1 50 1 00 50

No. 160. Potentate, three premiums 1 50 1 00 50

No. 161. Rose, three premiums..... 1 50 1 00 50

Thursday, August 1.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 162. Twenty blooms, clusters, sprays, stems, or spikes, in vases, three premiums.. $3 00 2 00 1 00

NATIVE FLOWERS.—

No. 163. Clematis, display in vases, two premiums ... 2 00 1 00

No. 164. Display in vases, no restrictions, five premiums 3 00 2 00 1 50 1 00 50

BASKET,—NO RESTRICTIONS.—

No. 165. AMATEUR,—four premiums..... 3 00 2 00 1 00 50

No. 166. FLORIST,—four premiums..... 3 00 2 00 1 00 50

APPLE.—

No. 167. Any variety, gratuity.

PEAR.—

No. 168. Any variety, not scheduled, gratuity.

BLACKBERRY.—

No. 169. Snyder, one quart, three premiums 1 50 1 00 50

No. 170. Wachusett, one quart, three premiums .. 1 50 1 00 50

No. 171. Other varieties, not scheduled, gratuity.

VEGETABLE.—

CORN,

No. 172. Crosby, three premiums..... ...$2 00 1 50 1 00

CUCUMBER,

No. 173. Three specimens, three premiums..... 1 50 1 00 50

TOMATO,

No. 174. Acme, three premiums.. .... 1 50 1 00 50

Thursday, August 8.

ANTIRRHINUM,—SNAP DRAGON.—

No. 175. Collection in vases, no duplicates, four premiums $2 00 1 50 1 00 50

GERMAN STOCKS.—

No. 176. Collection in vases, no duplicates, four premiums..... 3 00 2 00 1 00 50

CHINA PINK.—

No. 177.	Collection, not to exceed 40 vases, no duplicates, four premiums...	3 00	2 00	1 00	50

APPLE.—

No. 178.	Astrachan, four premiums	2 00	1 50	1 00	50
No. 179.	Sweet Bough, three premiums..		1 50	1 00	50

PEAR.—

No. 180.	Giffard, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 181. Any variety, gratuity.

VEGETABLE.—

SQUASH,

No. 182.	Any variety, three premiums	$1 50	1 00	50	

TOMATO,

No. 183.	Livingston's Perfection, three premiums.	1 50	1 00	50	

Thursday, August 15.

CUT FLOWERS.—

No. 184.	Not to exceed 30 vases, four premiums	$3 00	2 00	1 00	50

GLADIOLUS.—

No. 185.	Large vase of not to exceed 20 spikes, three premiums.....		2 00	1 00	50

SALPIGLOSSIS.—

No. 186.	Not to exceed 20 vases, four premiums	2 00	1 50	1 00	50

APPLE.—

No. 187.	Oldenburg, four premiums $2 00		1 50	1 00	50
No. 188.	Yellow Transparent, three premiums....		1 50	1 00	50

No. 189. Any variety, not scheduled, gratuity.

PEAR.—

No. 190.	Clapp, five premiums.....	3 00	2 00	1 50	1 00	50

PEACH.—

No. 191.	Alexander, three premiums.....		1 50	1 00	50
No. 192.	Beatrice, three premiums.....		1 50	1 00	50
No. 193.	Rivers, three premiums		1 50	1 00	50

VEGETABLE.—

BEAN,—CONCORD.—

No. 194. Half-peck, in pods, three premiums..... 1 50 1 00 50

CORN,

No. 195. (Sweet), 12 ears, of not less than 12 rows, three premiums..... 1 50 1 00 50

SQUASH,

No. 196. Marrow, 3 specimens, three premiums... 1 50 1 00 50

TOMATO,

No. 197. Beauty, three premiums..... 1 50 1 00 50

Thursday, August 22.

ASTER.—

No. 198. Rose, 20 vases, one bloom in each, three premiums.... .....$2 00 1 00 50

No. 199. Comet, 20 vases, one bloom in each, three premiums..... 2 00 1 00 50

No. 200. Victoria, 20 vases, one bloom in each, three premiums 2 00 1 00 50

No. 201. POMPON, not to exceed 30 vases, one spray of not more than six blooms in each vase, four premiums 3 00 2 00 1 00 50

No. 202. TRUFFAUT, — PÆONY - FLOWERED, not to exceed 30 vases, one bloom in each vase, four premiums ... 3 00 2 00 1 00 50

No. 203. Any other variety than the above, not to exceed 20 vases, one bloom in each, three premiums..... ..... 2 00 1 00 50

GLADIOLUS.—

No. 204. Twenty vases, one spike in each, four premiums 3 00 2 00 1 00 50

PHLOX—PERENNIAL.

No. 205. Twenty vases, one head in each, four premiums..... 3 00 2 00 1 00 50

APPLE.—

No. 206. Somerset, four premiums.... ...$2 00 1 50 1 00 50

No. 207. Williams, four premiums..... 2 00 1 50 1 00 50

PEAR.—

No. 208. Rostiezer, three premiums..... 1 50 1 00 50
No. 209. Tyson, three premiums 1 50 1 00 50

PEACH.—

No. 210. Amsden, three premiums..... 1 50 1 00 50

VEGETABLE.—

BEAN—(HALF-PECK IN POD).—

No. 211. Horticultural (pole), three premiums ...$1 50 1 00 50
No. 212. Goddard, three premiums 1 50 1 00 50

TURNIP,

No. 213. Purple top, flat, three premiums..... 1 50 1 00 50

Thursday, August 29.

SCABIOSA.—

No. 214. Collection not to exceed 20 vases, not exceeding six flowers in a vase, four premiums $3 00 2 00 1 00 50

ZINNIA.—

No. 215. Collection not to exceed 24 vases, at least 12 varieties, one flower in a vase, four premiums 3 00 2 00 1 00 50

LILIUM SPECIOSUM.—

No. 216. Twelve vases, four premiums 3 00 2 00 1 00 50

MARIGOLD.—

No. 217. Collection in vases, no duplicates, three in a vase, four premiums.. 3 00 2 00 1 00 50

BEGONIA—(TUBEROUS ROOTED).—

No. 218. Display, not to exceed 24 vases, four premiums..... 3 00 2 00 1 00 50

APPLE.—

No. 219. Sour Bough, three premiums..... 1 50 1 00 50
No. 220. Any other varieties, not scheduled, gratuity.

APPLE—(CRAB).—

No. 221. Transcendent, 24 specimens, three premiums 1 50 1 00 50

PEAR.—

No. 222. Assomption, three premiums 1 50 1 00 50
No. 223. Petite Marguerite, three premiums..... 1 50 1 00 50

PEACH.—

No. 224.	Cooledge, three premiums	1 50	1 00	50
No. 225.	Foster, three premiums	1 50	1 00	50
No. 226.	George IV., three premiums	1 50	1 00	50
No. 227.	Other varieties, not scheduled, gratuity.			

PLUM.—

No. 228.	Bradshaw, three premiums	1 50	1 00	50
No. 229.	McLaughlin, three premiums	1 50	1 00	50
No. 230.	Washington, three premiums	1 50	1 00	50

VEGETABLE.—

LIMA BEAN,

No. 231.	Large, half-peck, three premiums	$1 50	1 00	50

CAULIFLOWER,

No. 232.	Three specimens, three premiums	2 00	1 50	1 00

TOMATO,

No. 233.	Any variety, not scheduled, three premiums	1 50	1 00	50

SQUASH—(TURBAN).—

No. 234.	Three specimens, three premiums	1 50	1 00	50

Thursday, September 5.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at* 3½ *o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 235.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50

BOUQUET—(PARLOR).—

No. 236.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 237.	FLORIST,—four premiums	3 00	2 00	1 00	50

DAHLIA.—

LARGE FLOWERED,

No. 238.	Not to exceed 20 vases, one flower in each, four premiums	3 00	2 00	1 00	50

POMPON,

No. 239.	Not to exceed 20 vases, one spray in each, four premiums	3 00	2 00	1 00	50

NASTURTIUM OR TROPÆOLUM.—

No. 240.	Not to exceed 24 vases, not more than six blooms in each vase, four premiums	3 00	2 00	1 00	50

VERBENA.—

No. 241.	Not to exceed 30 vases, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 242.	Golden Sweet, three premiums	$1	50	1 00	50
No. 243.	Worcester Spy, three premiums	1	50	1 00	50
No. 244.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 245.	Ansault, three premiums	1	50	1 00	50
No. 246.	Earle's Bergamot, three premiums	1	50	1 00	50
No. 247.	St. Ghislain, three premiums	1	50	1 00	50

PEACH.—

No. 248.	Crawford (Early), three premiums	1	50	1 00	50

PLUM.—

No. 249.	Gen. Hand, three premiums	1	50	1 00	50
No. 250.	Imperial Gage, three premiums	1	50	1 00	50
No. 251.	Victoria, three premiums	1	50	1 00	50

VEGETABLE.—

CUCUMBER—for pickles,

No. 252.	Half-peck, three premiums	$1	50	1 00	50

CORN,

No. 253.	(Sweet), 12 ears, of not less than 12 rows, three premiums	1	50	1 00	50

PEPPER.—

No. 254.	Large Bell, 12 specimens, three premiums	1	50	1 00	50
No. 255.	Squash, 12 specimens, three premiums	1	50	1 00	50

Thursday, September 12.

CUT FLOWERS,—DISTINCT VARIETIES,—

No. 256.	Not to exceed 20 vases, four premiums	$3	00	2 00	1 00	50

GERANIUM.—

No. 257.	Display, not to exceed 24 vases, one truss in a vase, four premiums	3 00	2 00	1 00	50

PANSY,—WITH FOLIAGE.—

No. 258.	Collection not to exceed 40 vases, one stem in each vase, four premiums	3 00	2 00	1 00	50

DAHLIA,—SINGLE.—

No. 259.	Not to exceed 20 vases, one spray in each, three premiums		1 50	1 00	50

GLADIOLUS.—

No. 260.	Display, not to exceed 30 vases, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 261.	Foundling, three premiums		$1 50	1 00	50
No. 262.	Garden Royal, three premiums		1 50	1 00	50
No. 263.	Holden, three premiums		1 50	1 00	50
No. 264.	Wealthy, three premiums		1 50	1 00	50

PEAR.—

No. 265.	Bartlett, five premiums	3 00	2 00	1 50	1 00	50
No. 266.	Lucrative, three premiums			1 50	1 00	50
No. 267.	Other varieties, not scheduled, gratuity.					

PLUM.—

No. 268.	Fellenberg, three premiums		1 50	1 00	50
No. 269.	Jefferson, three premiums		1 50	1 00	50
No. 270.	Lombard, three premiums		1 50	1 00	50
No. 271.	Monroe, three premiums		1 50	1 00	50
No. 272.	Quackenboss, three premiums		1 50	1 00	50

PEACH.—

No. 273.	Oldmixon, three premiums		1 50	1 00	50

GRAPE.—

No. 274.	Green Mountain, three clusters, three premiums		1 50	1 00	50
No. 275.	Moore, three clusters, three premiums		1 50	1 00	50

MELON.—

No. 276.	Green Flesh, three specimens, three premiums		1 50	1 00	50
No. 277.	Yellow Flesh, three specimens, three premiums		1 50	1 00	50

WATER,

No. 278. Three specimens, three premiums 1 50 1 00 50

VEGETABLE.—

CABBAGE,

No. 279. Brunswick, three specimens, three premiums... .....$1 50 1 00 50

CELERY,

No. 280. Six specimens, any variety, named, three premiums 2 00 1 00 50

Thursday, September 19.

ASTER.—

No. 281. Not to exceed 30 vases, four premiums $3 00 2 00 1 00 50

CUT FLOWERS—(BASKET).—No restrictions.

No. 282. AMATEUR,—four premiums 3 00 2 00 1 00 50

No. 283. FLORIST,—four premiums 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 284. Not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

APPLE.—

No. 285. Gravenstein, five premiums. $3 00 2 00 1 50 1 00 50

No. 286. Maiden's Blush, three premiums..... 1 50 1 00 50

No. 287. Porter, three premiums 1 50 1 00 50

APPLE,—CRAB.

No. 288. Hyslop, 24, three premiums 1 50 1 00 50

PEAR.—

No. 289. Hardy, three premiums 1 50 1 00 50

No. 290. Durandeau, two premiums.... .... 1 00 50

No. 291. Paradis d'Automne, three premiums 1 50 1 00 50

No. 292. Other varieties, not scheduled, gratuity.

PEACH.—

No. 293. Crawford (late), three premiums..... 1 50 1 00 50

No. 294. New seedling, originated in Worcester County, four premiums.....2 00 1 50 1 00 50

No. 295. Stump the World, three premiums..... 1 50 1 00 50

No. 296. Other varieties, not scheduled, gratuity.

PLUM.—

No. 297.	Coe's Golden Drop, three premiums		1 50	1 00	50
No. 298.	Moore's Arctic, three premiums.....		1 50	1 00	50
No. 299.	Pond's Seedling, three premiums.....		1 50	1 00	50
No. 300.	Reine Claude de Bavay, three premiums.		1 50	1 00	50
No. 301.	Japanese varieties, three premiums		1 50	1 00	50

GRAPE.—

No. 302.	Brighton, three clusters, three premiums.		1 50	1 00	50
No. 303.	Lindley, three premiums		1 50	1 00	50
No. 304.	Massasoit, three clusters, three premiums.		1 50	1 00	50
No. 305.	Worden, three clusters, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

CARROT,

No. 306.	Any variety, three premiums		$1 50	1 00	50

EGG PLANT,

No. 307.	Three specimens, three premiums		1 50	1 00	50

CABBAGE,

No. 308.	Red, three specimens, three premiums..		1 50	1 00	50
No. 309.	Savoy, three specimens, three premiums.		1 50	1 00	50

CAULIFLOWER,

No. 310.	Three specimens, four premiums..	2 00	1 50	1 00	50

Thursday, September 26.

CUT FLOWERS.—

No. 311.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 312.	In any form, four premiums.....	3 00	2 00	1 00	50

APPLE.—

No. 313.	American Beauty, three premiums.....		$1 50	1 00	50
No. 314.	Lyscom, three premiums		1 50	1 00	50
No. 315.	McLellan, three premiums.....		1 50	1 00	50
No. 316.	Mother, three premiums		1 50	1 00	50
No. 317.	Twenty-Ounce, three premiums		1 50	1 00	50
No. 318.	Holland Pippin, three premiums.....		1 50	1 00	50

PEAR.—

No. 319.	Buffum, two premiums			1 00	50
No. 320.	Louise Bonne de Jersey, four premiums	2 00	1 50	1 00	50
No. 321.	Seckel, five premiums	3 00	2 00	1 50	1 00	50
No. 322.	Superfin, three premiums		1 50	1 00	50
No. 323.	Urbaniste, three premiums		1 50	1 00	50
No. 324.	Washington, three premiums		1 50	1 00	50

PEACH.—

No. 325. Any variety, gratuity.

GRAPE.—

No. 326.	Barry, three clusters, three premiums		1 50	1 00	50
No. 327.	Concord, four premiums	2 00	1 50	1 00	50
No. 328.	Delaware, four premiums	2 00	1 50	1 00	50
No. 329.	Iona, two premiums			1 00	50
No. 330.	Merrimac, three premiums		1 50	1 00	50
No. 331.	Niagara, three premiums		1 50	1 00	50
No. 332.	Pocklington, three premiums		1 50	1 00	50
No. 333.	Salem, three premiums		1 50	1 00	50
No. 334.	Wilder, three premiums		1 50	1 00	50
No. 335.	Any variety, not scheduled, gratuity.				

VEGETABLE.—

No. 336.	Collection, not exceeding fifty varieties, four premiums	$8 00	6 00	4 00	2 00

Thursday, October 3.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 337.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 338.	Native Flowers in vases, no duplicates, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 339.	Coggswell, three premiums	$1 50	1 00	50
No. 340.	Fameuse, three premiums	1 50	1 00	50
No. 341.	Hubbardston, four premiums	2 00	1 50	1 00	50
No. 342.	Washington Strawberry, three premiums	1 50	1 00	50
No. 343.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 344.	Bosc, five premiums	3 00	2 00	1 50	1 00	50
No. 345.	Dr. Reeder, two premiums				1 00	50
No. 346.	Sheldon, five premiums....	3 00	2 00	1 50	1 00	50
No. 347.	Other varieties, not scheduled, gratuity.					

GRAPE,—OPEN CULTURE.—

No. 348. Any variety, three clusters, gratuity.

QUINCE.—

No. 349.	Champion, four premiums.....		2 00	1 50	1 00	50
No. 350.	Orange, five premiums....	3 00	2 00	1 50	1 00	50
No. 351.	Other varieties, gratuity.					

VEGETABLE.—

POTATO,

No. 352.	Six varieties (named), 12 specimens of each, four premiums.	$3 00	2 00	1 50	1 00

SQUASH,—Three specimens.

No. 353.	Essex-Hybrid, three premiums.....		1 50	1 00	50
No. 354.	Marblehead, three premiums.....		1 50	1 00	50
No. 355.	Any variety, not scheduled, three premiums		1 50	1 00	50

CELERY,—Six specimens.

No. 356.	Paris Golden, three premiums.....		2 00	1 50	1 00
No. 357.	White Plume, three premiums..... ...		2 00	1 50	1 00

Thursday, October 10.

CUT FLOWERS.—

No. 358.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50

APPLE.—

No. 359.	Belleflower, three premiums	$1 50	1 00	50	
No. 360.	Leicester Sweet, three premiums	1 50	1 00	50	
No. 361.	Sutton Beauty, three premiums	1 50	1 00	50	
No. 362.	Tompkins King, four premiums..	2 00	1 50	1 00	50
No. 363.	Other varieties, named, not scheduled, gratuity.				

PEAR.—

No. 364.	Dix, two premiums			1 00	50
No. 365.	Frederick Clapp, two premiums			1 00	50
No. 366.	Marie Louise, two premiums			1 00	50
No. 367.	Onondaga, three premiums	1 50		1 00	50

GRAPE.—

No. 368.	Diana, three clusters, three premiums	1 50		1 00	50

VEGETABLE.—

Onion,

No. 369.	Red Globe, twelve, three premiums	$1 50		1 00	50
No. 370.	Yellow Globe Danvers, twelve, three premiums	1 50		1 00	50

Salsify,

No. 371.	Three premiums	1 50		1 00	50

Squash,

No. 372.	Hubbard, three specimens, three premiums	1 50		1 00	50

Thursday, October 17.

CUT FLOWERS.—

No. 373.	In any form, five premiums	$3 00	2 00	1 50	1 00	50

APPLE.—

No. 374.	Peck, three premiums			$1 50	1 00	50
No. 375.	Pound Sweet, three premiums			1 50	1 00	50
No. 376.	R. I. Greening, five premiums	3 00	2 00	1 50	1 00	50
No. 377.	Other varieties, not scheduled, gratuity.					

PEAR.—

No. 378.	Anjou, five premiums	3 00	2 00	1 50	1 00	50
No. 379.	Comice, five premiums	3 00	2 00	1 50	1 00	50

VEGETABLE.—

Squash,

No. 380	Bay State, three specimens, three premiums			$1 50	1 00	50

Parsley,

No. 381.	Half-peck, three premiums			1 50	1 00	50

Turnip,

No. 382.	Purple Top Globe, three premiums			1 50	1 00	50

White Egg,

No. 383.	Three premiums			1 50	1 00	50

Thursday, October 24.

POT PLANTS,—IN BLOOM.—

No. 384.	Display, five premiums	$4 00	3 00	2 00	1 50	1 00

APPLE.—

No. 385.	Baldwin, six premiums	$4 00	3 00	2 00	1 50	1 00	50
No. 386.	Canada Red (Old Nonesuch), three premiums				1 50	1 00	50
No. 387.	Golden Russet, three premiums				1 50	1 00	50
No. 388.	Russet, sweet, three premiums				1 50	1 00	50
No. 389.	Golden Russet of Mass., three premiums				1 50	1 00	50
No. 390.	Lemon Greening, two premiums					1 00	50
No. 391.	McIntosh, three premiums				1 50	1 00	50
No. 392.	Northern Spy, five premiums		3 00	2 00	1 50	1 00	50
No. 393.	Palmer, three premiums				1 50	1 00	50
No. 394.	Roxbury Russet, four premiums		2 00	1 50	1 00	50	
No. 395.	Collection, not to exceed ten varieties, four premiums	5 00	3 00	2 00	1 00		

PEAR.—

No. 396.	Angoulême, three premiums				1 50	1 00	50
No. 397.	Clairgeau, three premiums				1 50	1 00	50
No. 398.	Dana's Hovey, four premiums		2 00	1 50	1 00	50	
No. 399.	Josephine de Malines, three premiums				1 50	1 00	50
No. 400.	Langelier, three premiums				1 50	1 00	50
No. 401.	Lawrence, five premiums		3 00	2 00	1 50	1 00	50
No. 402.	Winter Nelis, three premiums				1 50	1 00	50

VEGETABLE.—

CELERY,—Six specimens.

No. 403.	Boston Market, four premiums	$3 00	2 00	1 00	50
No. 404.	Giant Pascal, four premiums	3 00	2 00	1 00	50
No. 405.	Any variety, not scheduled, four premiums	3 00	2 00	1 00	50

TURNIP,

No. 406.	White Swede, three premiums		1 50	1 00	50
No. 407.	Yellow Swede, three premiums		1 50	1 00	50

Annual Meeting, Wednesday, November 6, 1895.

CHRYSANTHEMUM.

TWELFTH SPECIAL EXHIBITION

ON

Thursday, November 7th, 1895.

[N. B. All the specimens placed in competition must be from the best types, and owned and grown by the competitor three months.]

No. 1. For the best six large-flowered, in pots, distinct named varieties, five premiums ... .
$8 00 6 00 4 00 2 00 1 00

No. 2. For the best three plants in pots, from Amateurs,—distinct (named), four premiums ....
$4 00 3 00 2 00 1 00

No. 3. For Specimen Plant, of any variety, three premiums.
$3 00 2 00 1 00

No. 4. For twelve Cut Blooms, distinct named, with long stems and foliage, in vases, five premiums... ....
$5 00 4 00 3 00 2 00 1 00

No. 5. For six Cut Blooms, distinct named, with long stems and foliage, in vases, four premiums.....
$3 00 2 00 1 00 50

N. B. Exhibitors competing in both Nos. 4 and 5 must not duplicate.

No. 6. For twelve sprays, distinct named, in vases, five premiums..... .....
$4 00 3 00 2 00 1 00 50

No. 7. For one Cut Bloom, named, with long stem and foliage, three premiums ....
$3 00 2 00 1 00

No. 8. For Vase, of not to exceed ten White blooms, five premiums .....
$3 00 2 00 1 50 1 00 50

No. 9. For Vase, of not to exceed ten Red blooms, five premiums .....

$3 00 2 00 1 50 1 00 50

No. 10. For Vase, of not to exceed ten Yellow blooms, five premiums .....

$3 00 2 00 1 50 1 00 50

No. 11. For Vase, of not to exceed ten Pink blooms, five premiums .....

$3 00 2 00 1 50 1 00 50

No. 12. For Vase, of not to exceed ten blooms, mixed varieties, five premiums .....

$3 00 2 00 1 50 1 00 50

Gratuities may be awarded for meritorious exhibits.

No. 13. Fern, one plant, gratuity.

No. 14. Palm, one plant, gratuity.

No. 15. Decorative and Ornamental Plants, gratuity.

☞ This Exhibition will be open to the public from 2 P. M. until 9 P. M.

ADMISSION 10 CENTS.

N. B. Exhibitors are requested to make their entries the week previous. All articles intended for this Special Exhibition, must be in the Hall, and ready for inspection by the Judge by 12 o'clock, M., precisely.

By authority of the

COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS.

Attest:

EDWARD WINSLOW LINCOLN,

Secretary.

OFFICERS AND COMMITTEES
OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1894-95.

PRESIDENT:

HENRY L. PARKER, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; O. B. HADWEN, of Worcester.

SECRETARY:

EDWARD WINSLOW LINCOLN, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward L. Davis,	Worcester.
James F. Allen,	Worcester.	Henry Reed,	"
Henry Woodward,	"	Henry Phelps,	"
William T. Merrifield,	"	James Draper,	"
William H. Earle,	"	Freeman M. Marble,	"
H. M. Quinby,	"	Luther R. Eames,	"
Frank J. Kinney,	"	Calvin L. Hartshorn,	"
Alden Rice,	"	Lewis A. Peters,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	John L. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward,	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

Edward W. Lincoln, 1897. George E. Francis, 1896. Nathaniel Paine, 1895.

ON LIBRARY AND PUBLICATION:

Edward W. Lincoln, Adin A. Hixon, George E. Francis.

ON NOMENCLATURE:

James F. Allen, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, F. M. Marble, Charles Greenwood, Edward W. Lincoln.

ON ARRANGEMENTS AND EXHIBITIONS:

James Draper, *Chairman.*

Flowers, Plants, &c.	*Fruits, &c.*	*Vegetables.*
Frederick A. Blake,	James Draper,	Charles Greenwood,
Edward Hall,	O. B. Hadwen,	Calvin L. Hartshorn,
Mrs. F. H. Merrifield,	George C. Rice,	Simon E. Fisher,

President Parker, and *Secretary* Lincoln.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
Albert H. Lange.	James Draper.	Charles Greenwood.

Edward Winslow Stiles

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

A. D. 1896-97.

PART I.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
1897.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY,
A. D. 1896.

ANNUAL REPORT OF THE SECRETARY.

To the Members
of the
WORCESTER COUNTY HORTICULTURAL SOCIETY:

WITH the passing of William T. Merrifield, on the 27th of last December, at the extreme age of eighty-eight (88) years, the existence of the generation by which this Society was founded, and so long maintained in perennial vigor, may be considered to have virtually closed. It is true there are some whose years are not so far removed from his, and still more who treasure among their vivid horticultural memories a clear recollection of his life-long association with our early corporate action and aims. But yet he must be accounted rather as one of those choice spirits who united with William Lincoln, John Green, Anthony Chase, Frederic William Paine and the Senior Salisbury; who were not selfishly satisfied to gather from their own orchards, or to consider the lilies in enclosed field or open meadow; but elected to lay broad and deep the foundations of a Society whereby to advance the science and encourage and promote the practice of horticulture in and throughout the County of Worcester. From the very first, the contributions of Mr. Merrifield, whether of Fruit or Flower, and usually of both, were never lacking. Latterly, as his store of Plants,—

either distinctively Ornamental, or of Special Rare Foliage,—was augmented by natural increase or judicious purchase, our local field became too contracted for his ambition, which could not content itself within the restricted compass of a "pent up Utica." For years his collection was represented in the Exhibitions of the Massachusetts Horticultural Society, and the occasions were few indeed when first awards did not fall to his lot. It was the good fortune of Mr. Merrifield to be aided by the service of Mr. James Comley who, in that early employment, first gave evidence of the professional skill and individual good taste which has since become so conspicuously manifest in Green-House and Garden at Lexington. It must not be supposed that his honors came to Mr. Merrifield without a struggle; for in President Salisbury he found an antagonist who was not to be regarded lightly. But it was an honorable contest for preëminence;—a rivalry always dubious upon its merits, yet ever conducted amicably and whereof the decision was accepted without murmur or repining. Mr. Merrifield kept up his interest in that special culture until the difficulty of obtaining suitable professional skill, combined with the burden of years, induced him to relinquish what had been a mingled pleasure and responsibility. When, because of advancing years, the proper oversight of his choice collection of Plants exacted more attention and time than he could well bestow, he offered the whole to the Commission of Public Grounds of Worcester, in free and unrestricted gift. That it was declined, with cordial gratitude for the generous proffer, was due to no lack of appreciation, but to the fact that the Commission at the time possessed no facilities for the custody and care of specimens so tenacious in their requirements of steady temperature and continuous supervision. Since he parted with his pets his name has not appeared upon the rôle of our exhibitors. But his interest in the management of our affairs never failed to be displayed; and he was always ready to co-operate by word or deed at any apparent crisis in our business. He was of essential assistance when our Hall was originally planned and constructed, his practical experience being of unusual value at a time when the reputation of our

Builders had not become co-extensive with the Republic. At the termination of services so long and freely rendered it would argue ill for the credit of this Society were it to withhold the tribute to his memory so nobly earned by his disinterested labors in our behalf.

In this our Hall we shall see him no more in the body. But there ought to be, and indeed is, no valid reason why the space among his fellows, as yet vacant upon our walls, should not be filled by his portrait, to remind us continually that there is no break in the endless chain that connects Horticulture upon Earth with the Celestial Eden.

Months, nay years, have passed into the endless chain of Time, since, in response to somewhat querulous criticism of its conduct, your Committee on Library and Publication announced that it had made arrangements for a Card Catalogue of all publications in possession of the Society. It is to be hoped that it will be of use, when completed. So far, experience would hardly justify faith in a crying need to be supplied in such form and manner. The first application has yet to be made compelling recourse to the various decks cut, shuffled, and indicated. In the dogma of the final perseverance of the Saints, however, we are enabled to descry a ray of hope howsoever faint. So that it is possible for us to trust that the proposed Catalogue may be finished in the life-time of the youngest among you, *Deo volente;* and, more emphatically, its fancied benefits, *Fœminâ placente*, may be experienced by some now living. In the care and management of a small, select, and somewhat technical collection of Books, your Committee on Library and Publication decline to keep pace with literary scorcher, electing rather the sure, if more deliberate, guidance of Mnemosyne.

So much by way of prelude! to pattern after the pulpiteers.

Upon this occasion my Text may be found in the fifteenth verse, twenty-fourth chapter of Joshua:

"And yet, if it seem evil to you to serve the Lord, choose you this day whom ye will serve!"

Shall this Society advance in the ways that have been approved for a half-century; ways whose signal success has commended

them to our deliberate judgment, and wherefrom occasional departure, upon the spur of a fleeting impulse, has been fraught with decadence and loss? For more years than memory can easily recall, it was a settled practice to confine our efforts to the promotion of Horticulture within the County of Worcester, rightly deeming that field ample for all that we might do or consider. *So*,—we have prospered beyond ordinary measure; and *thus*, in all likelihood, we might continue to win praise and accumulate substance, if only contentment, that pearl of modest deserving, were esteemed an adequate reward for individual effort. We are ever striving and hoping for a bountiful harvest whereof the superfluity but contributes to nourish our discontent.

But we are not satisfied with "a little field well tilled," hearkening to the siren song that we should challenge the competition of Florists throughout the Republic in one particular department of professional rivalry. Without similar challenge, the *Fruit* of Worcester County speaks for itself everywhere, acknowledging no superior. Why should it be deemed worth our while to enlist in the foolish strife of modern professionalism; to array ourselves as floral gladiators whereby, if at the close of an embittered struggle, we achieve cup or purse, it must follow upon the sacrifice of all those incentives to which we owe our past uninterrupted prosperity!

Nothing struck the *Senior* Salisbury so forcibly, in a trip through England almost a half-century since, when he visited an Exhibition of the Royal Horticultural Society, as the fact everywhere too plainly manifest, that the preference of a limited class appeared to be regarded rather than the tastes of the multitude. He warned us to beware of that pitfall. Is there not cause; is it not time to repeat that warning of our whilom President and always benefactor? Shall we exalt the flowers of restricted culture, howsoever gorgeous in color, over those superb species which every one admires and that any one may cultivate to perfection! Shall the Chrysanthemum command the devotion of Three Days,—the Rose of an hour and half? What are its shortcomings that we are no longer to consider the Lily! What is there in that built-up idol of caprice, conceit,

and fashion that the simple lovers of flowers in the home-garden should suffer themselves to be carried off their feet in the mad rush to swell the throng which wastes energy and life in the inanities of Vanity Fair?

Such species are not, and cannot be, grown by the great majority of our members. Nor is it too much to assert that they are without the range of cultivation by any but the very few who get their livelihood by the growth of flowers that are beyond the means and skill of the average horticulturist. And after they have been thus rarely developed, they are at once placed on exhibition in every Florist's window, subject to cull and purchase by every one that passes. Are they withheld from public view that they may be displayed first in our Hall? The intense verdancy in such a question might well represent two blades of grass where was but one before. Do you care to see them, after hours and days of prolonged exposure to common inspection, when what chance to be left are brought in here, old and stale, if haply they may coax a languid gaze.

This Society is one of two or three in the world,—the *World*, mind you! that can pay its debts and thereafter stand upon its feet, solvent and reputable. What it now is, it has become through strict attention to its legitimate business; burning incense upon the altars of Flora and Pomona, but never sacrificing fatlings to brainless and formless idols. To its constant influence is it due that our homes are brighter and therefore happier; and to its substantial encouragement may we attribute the marked expansion of a taste for floral beauty once awakened. Our awards are generous, if not lavish, and suffice to many who might otherwise have to deny themselves, enabling them to procure plants and seeds, the nucleus of future displays upon our tables. We cannot, if we would; we ought never to wish to tag on behind the beneficiaries of Fraud and Trust—the pampered children of manifold monopoly to whom it is all one whether they provoke a languid curiosity by offering premiums of One Hundred Cents or a like number of Dollars. If you are wise in your day and generation, valuing the continued existence of your Society in sound and wholesome vitality, you will

abandon all forms of Floral Debauch to the devotees of Fashion and Folly, who have long lost every sensibility to genuine emotion; whose sole appreciation of a Floral Display is based upon their desire to show fine clothes in crowd, glare and crush; and of whom it is enough to say in this connection, when we are pointed for an example to the sums that they half-contemptuously toss into the professional ring, that they never cared to, and never did, maintain a Horticultural Society. We are told that the Chrysanthemum is exhibited in the commercial metropolis in pomp and splendor, amid the array of fashion and frivolity; but we are not reminded by those who would have us fool away our substance in like manner, that the patrons of such labored displays are of the class who vie with each other in the profusion of their prodigal expenditure, and to whom, in turn, it is one and the same whether the Exhibition consists of Flower, Horse, or Dog! With them—butterflies of society,—the abuse of Floral Beauty verges upon prostitution. They form a framework whereon to illustrate the art of their dressmaker; and a dress-pattern in their judgment far outshines the rainbow tints of the most brilliant Japanese floriage. Shall we strive in hopeless rivalry with that get of the Golden Calf? We might stimulate the hot-house to its utmost product. *Cui bono?* Can a ship be run forever on forced draught? Do we care to foster the cultivation of Banana, or Pineapple despite every disadvantage of climate! It has been done in Worcester by our late honored associate, William T. Merrifield, to satisfy his own curiosity if it were any way practicable. Do we propose that this Society shall encourage growth of the *Victoria Regia*, because some millionaire of Cordage or Standard Oil fancies it for a green-house pet! Let us be satisfied with the knowledge that Fifty Years ago D. Waldo Lincoln grew and flowered that superb exotic here in Worcester. And all the while bear constantly in mind the significant fact that, while this, our thriving Rural City possesses and might, if it chose, pride itself upon the existence of a vigorous Horticultural Society, the huge, ever-growing metropolis was never able to keep such a Society alive for a twelvemonth. Of the reckless charge at Balaclava the

grizzled veteran of France might well exclaim, "It is superb, but not War." So we,—reminiscent of countless experiment, all based upon the splurge and tommy-rot of—see what a figure I cut! Who recall the dreary days of yore when Mechanics and Washburn Halls, were crammed to repletion with the choice and pick of Decorative and Ornamental Plants, of the plenteous and select Fruits from the prolific Orchards of Worcester County in which Peach and Plum, Pear and Apple contended for supremacy of excellence; but whereto the People did not come, the officers of the Society being alike and solely hosts and guests; we, I repeat, who were there—hewers of wood and drawers of water in the old times,—*Consule Planco*,—ask bluntly what more or better can we expect when our table is spread with a single course,—and that the showy, barbaric, scentless Chrysanthemum! Our Society was founded to grow, *not* to show. Our fathers and founders thought it expedient to meet occasionally that they might observe and compare notes upon the quantity and quality of the harvest, profiting by mutual experience and positive test. They threw their doors wide open, allowing the whole community to derive such benefit as they might from unrestricted observation and study. Yet the Exhibition was a mere incident, upon which the existence of the Society never depended and toward the extravagant promotion of which it was only recently perverted. The closer our approximation to the Circus or Theatre, the wider our departure from the true aim and spirit of Horticulture. Centuries since, strife for the Laurel Crown, or Wreath of Parsley, awoke the most strenuous competition of Grecian athletes. Now,—when Plutus has become our God,—the intrinsic value of a watch measures the degree of athletic devotion. Shall Horticulture sink to a level exclusively mercenary? Shall we advance and promote Floriculture and Pomology, because we love Flowers and Fruit, as we pledged ourselves when we accepted our Charter? Or shall we consult the whims, and dance attendance upon this or that fine lady, who denies nature, avoids offspring, but condescends a blasé stare at some professional monstrosity or natural freak, and tomorrow molly-coddles with equal and

indiscriminate rapture stallion, pug-dog, or tom-cat, whichsoever may, at the moment, monopolize metropolitan fancy!

From the very earliest day that this Society could make awards of substantial value the prevalent, if somewhat selfish, doctrine of protection of home industry has guided and governed its bounty. The requirement was ever strict that all specimens offered for premium should have been grown, by the competitors, on their own premises, within the County of Worcester, for months previous to the date of Exhibition. And yet, without leave first obtained from the Society itself, an exception is now made in favor of the Chrysanthemum. True, premiums payable from the corporate treasury are not proposed to be given to outsiders. But the dole, obtained after supplication by unauthorized agency, is officially held out for lure, under the auspices of this Society and as a part of its formal function. That which we would never consent to do, as a Society, is done indirectly by our trusted servants. If you will tolerate the pun, our action may not be *sub rosa*, since "mum" is the word. Has this Society sunk so low that, for an object deemed worthy of encouragement it must sue, *in formâ pauperis*, for individual alms? Has this Society so far foresworn itself that it must go back upon its assurance and pledge to the General Court, levying an admission fee when it secured partial exemption from taxation upon the plea that the benefits of its Exhibitions, with their resultant instruction, were dispensed to all without money or price!

Your Secretary would put his faith in the Common rather than the High School, where both cannot be had. He would educate the mass, at public expense, instead of a class. He would "advance the Science and improve the Practice of Horticulture," so that each family, in possession of its own homestead, should learn how best to cultivate its area, howsoever contracted. He would have the local Society taught to foster the development of novelty, but none the less to retain all which has approved itself of merit for generations past. He would spread far and wide the knowledge of every discovery, that Horticulturists might profit, the Country through, though the

individual should be obliged to forego his anticipated monopoly. Our usual weekly displays clearly indicate the line that we should draw between the Exhibition that instructs and the mere show that misleads and perverts. For a dozen weeks, in unbroken sequence, the fairest flowers of Summer are displayed upon our tables by our Members, who enjoy and desire no especial advantages in their culture, asking but a fair field and no favor in the struggle for floral preëminence. Pansy, Iris Germanica, Rose or Pæonia; Dianthus or Lilium, in their manifold forms; Iris Kæmpferi, Petunia, or Hollyhock; Clematis, Antirrhinum, Gladiolus, or Sweet Pea; Aster, Nasturtium, Dahlia, and Perennial Phlox! can we not find adequate scope for our energy and skill, adorning home and farmstead and bringing those charming, rugged species to their extreme excellence, without wasting substance and time in forlorn competition with the Florist whose greenhouse is his point of insuperable vantage, and who either grows the plants for his livelihood or hires a gardener to do it for his private gratification! All such are welcome to persevere, if they like, but as for us, Horticulturists, let us temper zeal with discretion, nor voluntarily fool away our time in a hopeless struggle with the vicissitudes of climate and the infinite fecundity of Insects. What have we lost by omitting hot-house grapes from our Schedule? Do not Brighton, Delaware, and Worden, the Rogers' Hybrids in their almost countless variety, more than supply the place of those costly rare exotics? Let us abandon a field wherein we can never be at home, leaving it to the wealthy amateurs of Boston and New York with an assurance of our best wishes, and in full conviction that so can we best serve our own interests and advance the cause of genuine Horticulture. The copious harvest from an ample Orchard is far better than a few choice specimens culled, after extreme labor and pains, from the Gardens of the Hesperides. The first supplies the market and ministers to the hearty, wholesome appetite of the community at large. The latter feebly tempt the languid cravings of the wealthy, whose surfeited life allows but a morbid hunger; and in whom natural taste and relish are destroyed by their customary methods of pampered nutrition.

A Society may hold a show of its especial products, for its own satisfaction; and to determine the comparative excellence of specimens of flower or fruit, displayed upon its tables, without derogation from its dignity or depreciating its legitimate aims. But when it descends to charge a fee for admission, where formerly its doors were thrown wide open; or becomes a suppliant for the bounty of cup or purse; it can no longer pretend to be studious of science from pure love of its aims and ends, nor claim in face of the General Court, as it could aforetime, to be guided solely by a desire to promote the Practice of Horticulture when the attainment of Premiums is so clearly its object! Gate-money yields but inadequate nourishment for the sustenance of a corporation like this, wherefor only honorable emulation should suffice. But Gate-money is not forth-coming; and what then becomes of this latter-day competition, and the stimulus that has grown to be so indispensable! Shall our officers go out into the market-place, saying, "We have piped unto you and ye have not danced!" May not the multitude properly respond, Your tune grates upon our ears! Your measures do not harmonize with our tastes! Nor do its results vindicate your policy!

The Pomologist of this latter day, as he wipes the sweat from his brow, wondering beneath the torrid rays of our August sun wherein he profited to have his home in the temperate zone, takes compulsory note that now, again, after the lapse of an entire generation, Cherry, Peach, Grape, and Pear, succumb to excessive frost following hard upon prolonged drought and the Apple parches, falling from the tree. A. D. 1861, your Trustees voted: "that in consequence of the extreme lightness of the crop of Fruit, of every species, it is deemed advisable to discontinue the Annual Autumnal Exhibition already announced." That necessity enforced itself because of a cataclysm alike elemental and political. The mercury had fallen in early January to minus 30°, which rigorous temperature, abetted and aided by a searching wind, blasted bud, and split tree-trunk wide open. The country was in the first throes of Civil War; and, from one end to the other, our own Commonwealth shivered in the fierce

convulsion. And now once more the mercury falls to minus 15°, and the keen, piercing winds of mid-winter check circulation, threatening life to the very quick. Our Exhibitions do not cease, because they are wisely held in such frequency as to meet the maturity of fruits in due succession. So that it must be a wholesale blight which shall preclude a display at least tolerable. Yet although duly held, we cannot but notice, and noticing deplore, the complete failure to respond to the invitation in our schedules of those delicious fruits of Summer and early Autumn, even if an ample Apple harvest in some measure modifies our regret.

One of our best Orchardists, who does not let his brain lie fallow, and to whom the name of Artemas Ward appeals with a local pride, if not humorous significance, as he cries to Horticulturists everywhere,—"Why are these things thus?" would account for the falling a still-born creation or harvest, whichsoever you elect to term it, by a theory of positive exhaustion! He declares that the trees are worn out. That they have been required to bear barrels rather than bushels, neither care nor labor being expended to reduce the surplus; nor pains taken to see that Hen or Hog eliminate Insects from future calculation as they,—the scavengers of Pomology,—might so well and effectually do if fairly encouraged. Just at the opening of this September he is worried because the Gravenstein,—that noblest of Autumnal Apples,—is rapidly dropping from the tree. And therein is a problem not for him alone, but for all of us who, a year ago, could find no apples worth a second thought obtainable for love or money; but who have cherished fond anticipations of a bounteous harvest in this, the legitimate bearing year, of ample barrels of fruit, copious casks of cider, honest vinegar for our beans, and that value of a thousand Gileads,—the Yankee Pie which responded to the exactions of Philosophy and satisfied Emerson in his more material yearnings. Indeed, and in truth, is not the problem one worthy of solution, nay, demanding it more than most that are a source of perplexity? But does that theory of Exhaustion suffice? If so, the harvest should decrease with each recurring year. Yet, A. D. 1896,

is there not abundant evidence that the yield of Fall and Winter Apples is likely to be excessive, as is usual in what we call the bearing, and know to be an alternate year. Moreover their quality is superior, being remarkably free from external blemish or any serious ravage of insect. Your Secretary is inclining to a belief, in some modification of climate, in so far as the gigantic forces of Nature can be affected by the comparatively puny efforts of man. Thermometer and hygrometer may contradict; but there do seem to be more marked divisions of the seasons into wet and dry than were the rule in times that some of us can distinctly recall. A. D. 1895, there was a protracted, severe drought, for weeks unbroken until its close in an almost torrential rain on the 12th and 13th of October. Is there a worse foe to fecundity, aye, to vitality even than Drought? Is there anything more essential, indispensable even to an ample harvest from Orchard and Vineyard than a copious supply of that element whereof their fruits are so largely constituted? Supplement such deficiency by a sequence of days like those which broke the record for intense heat in mid-August last, and how much vitality is left to challenge the icy blasts of Winter! Summing them up,—excessive crops, burning suns, continued lack of water, deficient supply of manurial nutriment! should there be wonder that

"The earth no longer brought forth grass, or that the herb ceased to yield seed after his kind, or that the tree and vine stopped yielding fruit, whose seed was in itself after his kind!"

The peculiarity of the present season, regarded pomologically, is the general local failure of Grape and Pear to yield an abundant harvest. Perhaps we are not warranted in counting, with absolute certainty, upon the Grape; although during the existing generation the seasons have been few wherein generous clusters of all the choicer varieties have not rewarded our hope and patience. But how shall we explain the almost entire deficiency of Pears,—of varieties that for the lifetime of a majority in this audience, were to be counted upon with quite as much assurance as the precession of the equinoxes,—or the alternations of heat and cold. The trunks of Cherry and Peach, of the Maple even, may split wide open under exposure to extreme

cold; but the wood of Pear-tree is as near iron-clad as aught that vegetates, in gelid contentment laughing to scorn the wildest caprices of the mercury. Yet now, for the first time in more than Thirty Years have these trusty standards, Louise Bonne, St. Ghislain and Washington, failed to yield specimens enough for Exhibition, while honest old Bosc and Winter Nelis are in like significant default. There is no manifest difference, in this respect, between the varieties peculiar to Autumn or Winter. You may tell me to possess my soul in patience, for that all will come out aright by another year. That answer might suffice for the individual; but, as Secretary of a Society reputable and expert as this, I am bound to put you upon inquiry into the cause for this almost entire failure of a fruit, hitherto so uniformly fecund and of unfailing reliance. We assume, from long experience, that in what are styled "odd years," numerically, the Baldwin, in especial among Apples, will withhold its product. But the Pear was never known to sulk, in that way; its prevailing characteristic being its certainty of bearing, and its worst fault that it is apt to yield in profusion each and every year. May we not well ask those who are to succeed us, as Horticulturists, who will possess manifold aids from special science and training that were unknown or denied to their forebears, to search out this all-important problem to the end that Worcester County may count upon its crop of fruit with as perfect assurance from failure as upon its annual harvest *of ice!*

"A little field well tilled!" The tillage may enure to the benefit of the individual owner, as why should it not! or, so rewarding his industry and thrift, possess him of facts wherefrom to build up an improved Horticultural Science. It cannot be charged against your Secretary that, in the long series of Reports which he has been privileged to deliver, from this place, he has ever avowed faith in the worship of Mammon as the whole, or even chief, duty of the Horticultural man. Yet there is no sin in a profit somewhat short of skin for skin, if you have a superfluous harvest to barter; since even priestcraft, whose trade it is to lull uneasy souls, encourages gambling in the chances of attaining futures of bliss. Now I have been shown

a tabulated account of the Income derived from a sale of fruit from a single tree, for a series of years, alike encouraging to the grower and creditable to his personal industry and pomological skill. Bear in mind that the receipts were from a tree of the Beurré Diel, which to many of us has been forbidden fruit since it cracked so hopelessly, yet which, in this particular instance, appears never to have given cause for discouragement.

YEAR.	INCOME.	YEAR.	INCOME.
A. D. 1887,	$17.65	1892,	$14.00
1888,	10.23	1893,	14.50
1889,	17.45	1894,	12.68
1890,	15.00	1895,	12.00
1891,	18.75		

Amounting in Nine (9) years to $132.26, and showing an average of $14.69. I anticipate the incredulity that will attend upon this statement, and can only meet it with an avowal of my faith in its entire honesty, re-inforced by a doubt of any gain to be derived from a deliberate lie in the premises. The more common tendency is to underrate, rather than to magnify, the receipts from one's especial calling. A mention of Beurré Diel can never be made without recalling to mind an old friend, Edwin Draper, who served this Society so long and devotedly as Chairman of its Committee of Arrangements while life lasted; and who always made an especial pet of that variety of Pear. If not of the very highest quality, it makes no false pretenses and, when at its very best, acknowledges few superiors.

Somewhat of an innovation in practice, but an approved fact of Horticultural science, has for years commended itself to your *Secretary* as a step in advance that should be taken by this Society. Almost from its earliest inception, certainly since it elected to live under By-Laws, its Trustees have been authorized to make suitable distribution of Seeds, Scions, &c., that might be presented to the Society. But therein is the same old trouble,—the worm at the bud that saps vitality from its very origin, if inertia may be credited with action or motion. It is the business of nobody in especial and therefore nobody concerns himself to attempt it. In the first place, the custom of presenting scion or seed has fallen into disuse. Now and then a mem-

ber may introduce a new Apple or Pear; but his associates, who observe that it has been awarded a gratuity, are more apt to covet and apply for scions from his slender stock of wood than to send to Ellwanger & Barry who first put it in the market and whose affair it is also to maintain it in stock. Now, how much better for the Society to procure, for distribution, a hundred or more scions of each and every variety of fruit that has other merits than novelty; to provide that they shall be fairly apportioned among members who will agree to engraft them upon suitable stocks and thereafter, as development progresses, to exhibit the mature specimens when they become ripe enough for inspection and test of quality.

It would be safe enough to repose implicit faith in the judgment and *bona fides* of Mr. William C. Barry, and to get him to supply a stated number of scions of varieties of Apple or Pear, upon whose identity and especial characteristics he would be willing to stake his reputation. It is his business now, as it has been for a lifetime; and the fame which he has thereby acquired serves him in good stead in each of his forward steps to assume the place of his honored father. So much for the matter in its commercial aspect.

But in another, and a local point of view, does such a project appeal to us most forcibly. How many of the newer, promising varieties of fruit, that have been shown in our Hall within the last fifteen (15) years, are so widely disseminated as to be safe from extinction? Are there a half-dozen of our Members, who can felicitate themselves upon possession of Earle's Bergamot in full vigor! Its very parentage, to which its real excellence is due, menaces its permanent existence, Belle Lucrative being notorious for excessive fecundity, and therefore containing within itself the germ of disease and the ultimate assurance of sudden death. If we would be more careful in the selection of a stock whereon to engraft that excellent Pear,—very likely not the best variety with which we are acquainted, but most assuredly the best that was ever originated in Worcester; and which not only for its peculiar merits, but also because it owes its origin to John Milton Earle, we might hope confidently to spare ourselves a grievous loss.

In looking around for a most suitable stock, one ever healthy in itself and therefore best promising to transmit its own vigor to its fosterling, your Secretary can think of no variety which he would choose with such implicit trust as Howell. It is native to our soil, was never known to blight, and, although bearing as freely as the female parent of Earle's Bergamot, never fails to develop all its offspring in sound maturity. Your Secretary would try the experiment himself, instead of urging it upon others, had he an idle yard square of land and were he younger. So much at least is certain, that it will be a lasting reproach to this Society to suffer the only variety of Pear originated by one of our members, after infinite patience, a variety of great promise whether you look to fecundity or quality, to perish, leaving no trace.

Apples have been originated, not accidentally, but of set purpose, in close proximity to the City of Worcester, whose merits should ensure their wide distribution; yet which can scarcely be found at all save upon the trees that first bore them. Here or there might be discovered a Worcester Spy, after persistent search. But who has undertaken to propagate the Dawson, which arrested the attention of Charles Downing in the latter years of his life, and became his study before its untimely close!

Superb Peaches have been placed upon our tables, from time to time, grown a-nigh Elm Street in this city, which no one apparently cares to perpetuate by budding; an indifference or neglect that, in former years, governing the action of Horticulturists, might have cost and lost us Cooledge or the Crawfords. Now the question suggests itself if it would not be well worth our while for the Society to purchase all the scions of local varieties of fruit holding out at least fair promise, which the owner might be induced to spare, apportioning them among our Members who would agree to engraft and care for them, and to exhibit their produce in this Hall! Would not such a distribution tend more directly to

"Advance the Science and encourage and promote the Practice of Horticulture"

than the award of an equivalent in premiums, in dreary monotony, upon the same kinds, year after year, although indeed they

would likely be largely increased by such distribution, in the long run, under the guaranty of the Society. In that way also would varieties be more widely diffused, the community becoming gainers since the market would be more freely and fully stocked. I have heard the statement, by men who ought to know, that keen scrutiny would detect new and noteworthy Apples in almost every Town of Worcester County. Perhaps the geese might not all be swans! But neither was the Baldwin so highly accounted when first discovered and scarcely appreciated in its original cow-pasture. In this respect, our farmers are too modest by half and stand in their own rustic light because of their lack of urban cheek! The fingers of both hands will scarcely keep tally of the noteworthy, if not first-class Apples whose origin is traced directly to Worcester County. Would it not repay our efforts to hunt them up; to take care that their scions are generally secured and engrafted; and to determine practically if there shall be no future genesis of new and palatable varieties in other towns than Hubbardston, Sterling, or Sutton; leaving out of consideration Worcester,—in which Architecture is running a close race with those occupations that fructify rather than cumber the ground!

But even then of what use will it be to grow nice and abundant specimens, of anysoever variety, if they are to be stored away,—not to be had when wanted. While this is written, not a barrel of Gravenstein could be discovered along Main Street, by one who would have gladly purchased, in a stretch of a mile. It has been problematical, for long, whether it does not cost dearly to live in Worcester, much more than it ought when you make a just apportionment between civic consumption and rural production. People must know that things exist, and can be had, before they can take a fancy to them; and should find them proffered in plain sight, along public thoroughfares, that they may be tempted to purchase. We hear more than enough glib talk, about Election-time, of the Home-Market! and of how essential it is to manufacturers that they should be fostered upon the pap of Protection! But what kind of a home-market is that where a man is compelled to peddle his fruit from house to house, consuming or wasting more time in petty traffic than was

required for the gathering of his harvest! We have a grand location for a Market-House in this our Worcester; but it cannot be applied to its proper use because of idle dreams of its lofty conversion to the barter of tape and needles! The land appears to have become an object of adoration, a sort of Fetich, wherefrom everything useful is scrupulously tabooed. Let some measure be advocated, of common interest and general benefit, behold this plot of ground, unimproved and unprofitable, is thrust in the way, an obstacle alike inevitable and insuperable. Without a Market-Place we can have no Home-Market, although the smoke from factories should besmirch the entire face of Nature. If we would dispose of our Apples, like everything else, we must let it be known that we have them to sell. But if they are all shipped to England, will it not be too expensive for those of us who wish an occasional barrel to cross over to Covent Garden in their train and quest?

Have Cattle-Shows, which show pretty much everything that was not perpetuated in the Ark; have Horticultural Exhibitions, which minister to an eclectic taste in Flowers or Fruit, lost their attraction? The one exacts the last cent for admission from all upon whom it can lay hands, because it must in its neck-and-neck race with insolvency. The other throws its doors wide open, but sees the same faces each successive week and realizes that its instruction is largely wasted in that dreary monotony of attendance. Newspaper columns are crammed to repletion with advertisements in behalf of the Mammon of Agriculture, responsive to which temptation editorial pens are glibly subservient. Horticulture offers no pecuniary lure and gets perfunctory comment or criticism in the limited space reserved for a bare statement of awards. In point of fact, Floriculture and Pomology command less notice than they did in the infancy of this Society, when the sole method of addressing the public was to be found in the weekly issues of the *Ægis* and *Spy*. If we will be satisfied with the display of our Garden or Orchard produce, nor mind although no one comes to see it but ourselves, it may be that our mission will be as well fulfilled even if it be not so conspicuous. We invite the community to behold, that they may profit by our example. It is not our fault if the option is

neglected, because a foot-race, or a slugging match at foot-ball may be arranged for the same day. If we would but be content, not wearying in well-doing, nor waste energy and substance that we may strike an attitude and pose prominently before the public! We can scarcely avoid holding Exhibitions, since only at such is it possible to note steps in Horticultural progress, assuming always that those steps are in advance and not retrograde. But the presence of a crowd is practically, and ought theoretically, to be matter of entire indifference to us with whom gate-money is matter of supreme unconcern. Our avowed object is to advance the Science and promote the Practice of Horticulture. If a blind generation elect to ride on a political band-wagon, avoiding our apple-cart, we may pity the error of judgment that induces them to lose so much. Yet therein,—because none are so blind as those who *will not* see,—is no reason why we should be diverted from our legitimate purpose, whereof the intent is clear as the light of day, and whose way, if narrow, leads only to the noblest results. An ideal life is depicted as spent under a man's own vine and fig-tree. It is not selfishness that shrinks from the constant, obtrusive itch for publicity which may aid the sale of newspapers but will never construct Eden anew, nor restore the least of its lost flowers or fruits! Our City has been thronged, of late, with parades which are well enough in their way, so long as that way is not the be-all and end-all of their promoters. Yet possibly as useful in the long run is that steady devotion to duty, for its own sake, which seeks rather attainment than the fuss and feathers that are too often made to denote it; and whereof Horticulture contributes as much as any other pursuit to the sum of human happiness.

All which is Respectfully Submitted

[by]

EDWARD WINSLOW LINCOLN,

Secretary.

Horticultural Hall,
Worcester, Worcester County,
Massachusetts, November 4, 1896.

REPORT OF THE LIBRARIAN.

Horticultural Hall, Worcester,
October 31, 1896.

To the Members of the
Worcester County Horticultural Society.

Your Librarian respectfully submits the following report:

The Library has been open every day, Sunday excepted, this year, the same as in the past three years, proving each year by a more general use that it is of great value to those interested in Mycology and Native Flowers and Ferns. Attention is called to the books added the past two years on these subjects. Your Committee on Library and Publication have been fortunate in securing the services of Miss Rice, who has been at work on a Card Catalogue, which will be ready for use February 1, 1897.

The following Books, Periodicals and Papers have been added during the past year:—

Reports of the Commissioner of Education. Vols. 1 and 2, 1892 and 1893. Vols. 1 and 2, 1893 and 1894.

United States Department of Agriculture:

Circular No. 15. General work against insects which defoliate Shade Trees in Cities and Towns.

Field Columbian Museum Publications: Publication No. 6. Report Series. Vol. 1, No. 1.

Annual Report of the Director to the Trustees. 1894 and 1895.

West Virginia Experimental Station. Bulletin Nos. 40, 44.

Connecticut State Board of Agriculture and Experimental Station. Report for 1895. T. S. Gold, secretary.

Transactions of the Massachusetts Horticultural Society. Part 2. 1894.

United States Department of Agriculture. Accessions to the Library from July 1, 1895, to July 1, 1896.

Massachusetts Crop Reports. Bulletins Nos. 1 to 6, inclusive.

Cornell Agricultural Experimental Station. Bulletins Nos. 101 to 121, inclusive.

Hatch Experimental Station. Bulletins Nos. 33 to 41, inclusive.

Hatch Experimental Station. Eighth Annual Report. Jan. 1, 1896.

Meteorological Reports. Bulletins Nos. 82 to 93, inclusive.

Michigan Agricultural Experimental Station. Bulletins Nos. 127 to 133, inclusive.

Michigan State Board of Agriculture. 34th Annual Report. July 1, 1894, to June 30, 1895.

Consular Reports. Nos. 182, 183, 184.

The Natural History of Plants. Vol. 2. Parts 1 and 2. Kerner & Oliver.

Window and Parlor Gardening. N. Jönsson Rose.

The Structure and Development of the Mosses and Ferns. 1895. D. H. Campbell.

Fern Growing. English. 1895. E. J. Lowe, F. R. S.

Illustrated Flora of the Northern United States, Canada and the British Possessions. Vol. 1. 1896. Nath. Lord Britton and Hon. Addison Brown.

Spraying of Plants. Prof. E. G. Lodeman, with Preface by B. T. Galloway.

Elementary Text Book of Agricultural Botany. English. 1893. M. C. Potter.

Horticultural Hand Book and Exhibitors' Guide. English. 1895. William Williamson. Revised by Malcolm Dunn.

Pamphlet. Fertilizer Farming.

Pamphlet. The Brighter Side of Farming.

Directory of the Agricultural and Similar Organizations in Massachusetts. 1896.

Gypsy Moth. 1896. Profs. Forbush and Fernald.

Curtis Botanical Magazine. Vol. 51. 1895. English.

The Journal of Horticulture. English. Vols. 30 and 31. 1895.

British Fungi. Vols. 1 and 2. M. C. Cooke, M. A.

Illustration of British Mycology. 1849. T. J. Hussey.

Comparative Morphology and Biology of the Fungi Mycetozoa and Bacteria. De Barry.

Introduction to the Study of Fungi. M. C. Cooke, M. A. 1895.

British Fungus Flora. 4 vols. 1892 to 1895. George Masser.

Outlines of British Fungology. Rev. M. J. Berkeley.

The Journal of Mycology. Vol. V. Nos. 1, 2, 3, 4. 1889. Vol. VI. Nos. 1, 2, 3, 4. 1890 and 1891. Vol. VII. No. 1. 1891. No. 2. 1892. No. 3. 1893. No. 4. 1894.

Worcester Society of Antiquity: F. P. Rice. Town Records, 1828 to 1832. Marriage Records, 1747 to 1848.

Acts and Resolves of Massachusetts passed by Legislature, Session 1895.

Report of Massachusetts State Board of Agriculture and Experimental Station. 1895. W. R. Sessions, Secretary. Twenty copies for distribution.

Report of Town Officers of Leicester. Feb. 1, 1896.

Report of the Worcester Parks Commission. Nov. 30, 1895. Edward Winslow Lincoln, Chairman.

Transactions of the Worcester Agricultural Society and the President's Address.

Transactions of the 23d Annual Session of the Massachusetts State Grange.

The Index, published by the Junior Class, Massachusetts Agricultural College. Vol. 27. Dec., 1895. From Charles A. Peters.

Valedictory Message. Jan. 3, 1896. Hon. Henry A. Marsh.

Inaugural Address. Jan. 3, 1896. Hon. A. B. R. Sprague, Mayor.

Books received from Miss S. H. Powers: Massachusetts Agricultural Reports, 10 copies.

Modern Horse Book. Dr. Dadd.

Edward Winslow Lincoln: Harvard Graduates' Magazine. Vol. 4. Nos. 15 and 16. Vol. 5. No. 17.

George E. Francis, M. D.: Minnesota Botanical Studies. Bulletin No. 9. Parts 3, 4, 5.

United States Department of Agriculture, Division of Pathology. Bulletins Nos. 2, 3, 6, 7.

Supplement to the General Index of the Agricultural Reports. 1877 to 1885, inclusive.

Bulletin of Bussey Institute. Part 5. 1876.

Bulletin of the Iowa Agricultural College. Nov., 1886.

Ottawa Naturalist. Vol. 2.

Amateur Gardening. Springfield, Mass.

American Florist.

American Gardening.

Country Gentleman.
Florist Exchange.
Farm and Garden.
Gardening.
Garden and Forest.
New England Homestead.
Massachusetts Ploughman.
Meehan's Monthly.
Rural New Yorker.
Worcester Daily Spy.
English:
Agricultural Gazette.
Garden.
Gardener's Chronicle.
Gardening Illustrated.
Bulletin. State Board of Health. 1896. Nashville, Tenn.
Atlas of the City of Worcester. L. J. Richards & Co. 1896.

All which is respectfully submitted.

ADIN A. HIXON, *Librarian.*

REPORT OF THE TREASURER.

The Treasurer of the Worcester County Horticultural Society herewith presents his annual report for the year ending Nov. 4, 1896. The report shows a satisfactory condition of the Society's finances, the receipts during the year having been enough to allow of the reduction of the permanent loan $2,000. The income from the rent of the Hall shows an increase of about $400 over that of last year.

The receipts and disbursements have been as follows:

Dr.

1895.			
Nov. 5.	Balance as per last report,	$1,292.96	
1896.			
Nov. 3.	Receipts to date:		
	From rent of stores,	$5,750.00	
	From rent of Hall,	4,801.33	
	Membership fees,	88.00	
	Chrysanthemum exhibition,	78.20	
	For tickets to annual banquet,	135.00	
	From the Dewey Fund, for books,	17.64	
	Interest on bank deposits,	61.44	
	Mrs. James A. Norcross (prize for Chrysanthemums),	24.00	
	Mrs. James H. Wall (prize for Chrysanthemums),	10.00	
	Total,		$12,258.57

Cr.

1896.			
Nov. 3.	Payments to date:		
	City taxes and water rates,	$ 796.35	
	Premiums paid,	1,722.68	
	Paid the Judges,	150.00	
	Paid for coal,	225.42	
	Paid for gas,	948.02	
	A. A. Hixon (expenses at hall),	584.93	
	For salaries,	2,008.31	
	Interest on mortgage loan,	608.82	
	Paid on mortgage note,	2,000.00	
	Paid on account of banquet,	231.85	
	Printing and stationery,	291.48	
	Books and periodicals,	196.13	
	Repairs, etc.,	163.73	
	Total,	$9,927.72	
Nov. 4.	Balance of cash,	2,330.85	
			$12,258.57

THE F. H. DEWEY FUND.

Balance as per last report,	$1,017.64	
Interest on savings bank deposit,	40.20	
	$1,057.84	
Paid for books and periodicals,	17.64	
1896. Nov. 4. Balance of fund,		$1,040.20

Respectfully submitted.

NATHL. PAINE,
Treasurer.

Nov. 4, 1896.

The undersigned, Auditors of the Worcester County Horticultural Society, hereby certify that they have examined the accounts of the Treasurer and find the same to be correct and properly vouched, and that the cash balance is accounted for.

HENRY L. PARKER,
F. H. CHAMBERLAIN,
Auditors.

In Memoriam.

Horticultural Library,
Worcester, December 16, 1896.

Special meeting of the Trustees to take such action as might be deemed appropriate upon the death of the late Edward Winslow Lincoln, Secretary of the Society.

President O. B. Hadwen in the chair. Meeting called to order at 2.30 o'clock P. M.

President Hadwen said—

Gentlemen of the Trustees:—

We notice with profound regret and painful solicitude the absence for the first time for thirty-five years of the stalwart form and see the vacant chair of our late Secretary. It seems hardly possible that one so large hearted, so useful, so much esteemed and respected should have thus been summoned across the dark river, nearly the last of his generation, but the first of our Society. One who has been always present upon the recurrence of the annual meetings of the Society and Trustees.

The science, the practice, and the literature of horticulture has been vastly augmented by the benefactions emanating from his annual reports to this Society. Horticulture has gained in solid development and its interests widely extended by his untiring work. His accomplished pen has marvellously well chronicled the past,—who shall answer for the future?

We meet to-day to express our deepest sorrow at our loss, and our sincere condolence in this sad bereavement to his family; and all citizens of Worcester saddened by a sense of personal bereavement extend their heartfelt sympathy.

George E. Francis, M.D., offered the following resolutions:

As Trustees of the Worcester County Horticultural Society we desire to place on record our deep sense of the great loss sustained by ourselves, the

Society and the community in the death of our late Secretary, Edward Winslow Lincoln.

For thirty-six years he served this Society in his official capacity in the most faithful, untiring and absolutely unselfish manner, giving without stint all that was asked of his time, his learning, his excellent judgment and the vast experience stored in his remarkable memory.

It is useless to attempt to recall all that he has done for us; it is enough simply to state the plain fact that in every advance which our Society has made during the memory of most of us, in every worthy effort to enlarge our work, our resources, and our influence, he was always in the van, in his own personality combining the qualities of guide, pioneer and leader. Positive and clear in his ideas, which he was ready to express in pure, racy and vigorous English; his mind furnished with an accurate knowledge of what others had done for horticulture in the past and are doing for it to-day; always ready to welcome a suggestion for an improvement; always eager to give credit for good work, but always hating a sham; always faithful to his official duties,—we may not expect again to see his equal.

We desire also to offer our tribute of admiration and gratitude for his unexampled and magnificent work in developing our system of Public Parks. To him more than to any other man is due whatever beauty the public places of Worcester can show.

The resolutions were adopted by a rising vote and the Secretary *pro tem.* instructed to send a copy to the family of our late Secretary. Also, to each of the daily papers.

Further remarks were made by Hon. Stephen Salisbury, Hon. Henry L. Parker, James Draper and Arthur J. Marble.

Voted, and the Secretary *pro tem.* instructed, to decorate with an ivy wreath the portrait of our late Secretary kindly loaned for the purpose by the Artist, Henry E. Kinney.

ADIN A. HIXON, Secretary *pro tem.*

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1896-97.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Edward L. Davis,	Worcester.
Henry Woodward,	"	Henry Reed,	"
John B. Bowker,	"	Henry Phelps,	"
B. W. Potter,	"	Freeman M. Marble,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	Lewis A. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward.	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"	Mrs. T. A. Dawson,	"
Fred. H. Chamberlain,	"	Frederick B. Madaus,	"
William J. Wood,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

George E. Francis, 1899. Nathaniel Paine, 1898. Henry L. Parker, 1897.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, Joseph Jackson.

ON NOMENCLATURE:

Henry L. Parker, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, F. M. Marble, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

O. B. Hadwen, *Chairman.*

Frederick A. Blake,	Henry L. Parker,	Charles Greenwood,
Edward Hall,	James Draper,	Calvin L. Hartshorn,
Albert H. Lange,	A. J. Marble,	Simon E. Fisher,
Mrs. F. H. Merrifield,	George C. Rice,	Herbert R. Kinney,
William J. Wood,		

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
William J. Wood.	Henry Phelps.	Charles Greenwood.

WORCESTER COUNTY
HORTICULTURAL SOCIETY.

4th January, A. D. 1896.

ADDRESS

BY

O. B. HADWEN, President,

At the Opening of the Winter Course of Meetings for Essays and Discussion.

In discharging the duty incumbent upon me at the opening of the winter series of meetings of our Horticultural Society, I do so with some misgivings, that at least in some departments of Horticultural interests I am not capable to speak within the scope to which our discoveries and advancement have attained.

The winter meetings are proving of greater benefit to our members from year to year. They bring together, weekly, men and women animated with the one prominent desire, the advancement of practical and scientific horticulture; and so long as this policy is pursued, so long will we advance in the successful and refining pursuits of the garden and orchard, and maintain the fostering source to disseminate the knowledge and science pertaining to horticulture and its kindred callings.

Following the early annual work of the Society, the weekly exhibitions of fruits, flowers and vegetables in their respective seasons during the early spring, summer, and autumn, bring to our hall contributions of the highest merit and excellence.

The products of one advanced in the knowledge and science of his specialty, is always an object lesson, which stimulates the

beginner to higher and more persistent effort; the ingenuity of each contributor of fruit, flower or vegetable is brought out for inspection, and increases as time goes on. The cunning hand of nature assisted by the hand of man proves a charming weekly temptation to all, as the ripe years wane. Thus has Horticulture advanced through the work and influence of this organized Society, from the crude and imperfect culture of the earlier times, to the high standard attained at present, and as we progress the horticulturist will continue by intelligent work to advance both in practical and scientific art, in growing and crossing with the tendency to produce new and desirable kinds of fruits, flowers and vegetables, so necessary for the health and happiness of life.

When we review what has already been accomplished in the past half-century by the interchange of trees and plants, also of personal experience afforded at the weekly meetings, can any one correctly estimate the progress of the remainder of the century? By the foresight and wisdom of the gentlemen who founded this Society, we enjoy this beautiful hall most admirably planned and fully equipped for all the purposes of our Society. I believe I am the only person living* who attended the meeting when the committee of seven (7) was chosen to purchase the site whereon this building stands. It required at that time men of broad gauge and courage to attempt the purchase of land and erect a building adapted to the uses of this Society. The limited fund at that time, 1850, amounted to 5,126 dollars, the land cost 6,847 dollars, and the building 11,278 dollars when first constructed. Since that time it has been altered and improved at two different times at an expense far greater than the original outlay. We now have very beautiful halls, both in style of architecture and convenience, most admirably situated and suited to the purposes of the Society, and they are very popular and well patronized by the general public. In making these changes the Society found it necessary to incur indebtedness to a considerable amount, which is being liquidated by annual payments of both principal and

*The Secretary takes exception to the breadth of this statement.

interest. As the debt is diminished the Society is enabled to broaden its scope and encourage its contributions in corresponding ratio with increased offers of premiums.

The winter meetings planned for essays and discussions are proving a wholesome feature of the Society, adding much value to our Transactions with the printed experience of our best cultivators upon an extended variety of subjects, and as they continue will prove a valuable Encyclopædia of Horticulture and its kindred interests.

The interest in our winter meetings is manifest by an increased attendance of both ladies and gentlemen. The essays and discussions following fully occupy the allotted time. Either full or abstract reports appear in the daily papers, also in our Transactions. But it would seem by the teachings of Nature that the lessons of Horticulture are never to be finished; the college course of Horticulture is to last while time lasts; something new and interesting occurs every year, which nurtures the hope for increasing knowledge and usefulness as sometimes old and discarded plants are rejuvenated and again become new, with the constant interchange going on with all the countries of the earth, and must ever be of encouraging interest.

The soil of Worcester County is proving itself well adapted to the growth of nearly all the fruits of the temperate zone. By the application of the approved modes of culture, fruits are found upon our tables of rare excellence, not only of good size and beautiful color, but unsurpassed in flavor, and far superior in this respect to those of other sections of this country.

Flowers are also as finely grown here as anywhere, as our exhibitions annually prove, if we may except the chrysanthemum, in which much yet remains to be accomplished, to bring it up to the highest standard of perfection. It is quite obvious, however, we are on the right course to ultimately attain the desired information which will insure success.

Perhaps we have something to learn in regard to staging our special exhibitions of flowers to produce the best and most pleasing effect. The many varieties of flowers of more recent introduction from Japan are proving especially well adapted to our soil and climate, and are found among our best hardy flowers,

adding great variety and a wealth of beauty to our exhibitions.

The exhibitions of vegetables continue to improve, and the specimens for exhibition are, as a rule, especially well selected. Every season brings forth something new, proving interesting and well worthy of cultivation. More exhibition space is required in each recurring season. The interest of visitors in this department is especially manifest, as good vegetables contribute largely to good living.

Ornamental Trees constitute a portion of the vegetable kingdom in its broader sense, and, while they cannot be brought to our exhibition halls, they can, and do, ornament our grounds. They do add to refined taste and beautify the landscape. They have never received any encouragement from our Society by awards of premiums, but their importance should be encouraged in the beautifying of parks, farms, and all grounds where ornament contributes to the landscape and a more refined culture. The variety is yearly increasing, both by new sorts raised from seed and by importations from other countries.

On the whole I may in brief congratulate our members that we maintain a good standing among the Horticultural Societies, being at least second in wealth and influence among the societies of this country. Our interests are on the increase, and after fifty-four years of devoted labor we may feel justly proud of our inheritance and whatsoever we have added. All of this has been consummated by a steady and judicious course of conservative and wholesome management. We have not embraced with both arms every phantom that presents itself, which has often proved the embarrassment or ruin of so many Societies, but have maintained a judicious and well directed course, within our means, which has so largely contributed to our success. It is not my purpose at this time to elaborate, but merely to throw out a few hints, and afford time for the discussion which may follow.

We all naturally feel grateful for the success of the Society, in its sound financial condition and its usefulness to its members, and the gratification received by the general public at our exhibitions, which are free to all.

17th January, A. D. 1876.

ESSAY

BY

JAMES DRAPER, Worcester, Mass.

Theme—Our Home Grounds and our Roadsides: Their Influence on our Lives and the Lives of Others.

In presenting some thoughts upon our home grounds and our roadsides (their influence on our own lives and the lives of others), I am well aware that I am not entering any new field, but simply offer some suggestions as they occur to me, growing out of my own experience and observation, that may possibly prove helpful to others.

My object is to touch upon rural or suburban homes, rather than those within city limitations, where the landscape architect has perfected his work in the homes surrounding, and where the municipal authorities have full domain over the streets or roadsides.

My ideal home is not the one of broad domain, where abundant means enable its owner to employ a professional landscape gardener to lay out and plant on a most magnificent scale, but rather the typical farm home, nestled here and there among the hills, valleys and woodsides of our own native New England, be they near or remote from city or town advantages.

And here let me state, that having been privileged to visit nearly every section of this country, nowhere, in this broad land of ours, do I find so many comfortable and attractive farm homes and illustrations of ideal home life as exist right here in the land of the "Pilgrim Fathers."

"Nothing exerts a greater influence on character than the homes of the people" is an oft expressed saying.

How important, then, that these homes should be surrounded with such comforts and attractions as will contribute to this one great

end. To eliminate every feature that tends to detract from the greatest enjoyment of our home life is therefore of paramount importance.

"Order is Heaven's first law."

A place for everything and everything in its place is a very important factor in the appearance of our home grounds. To this end shelter must be provided for all implements of husbandry as well as every description of vehicle used upon the farm or by the family. It is neither economical nor creditable to any place to leave them where last used, or scattered at random along the roadsides, beside the walls or fences, or around the buildings. If implements and carts, wagons and the like, have reached that state of their existence that they are not worth housing, they certainly should not be allowed to encumber the ground.

The beauty of a shade or fruit tree is not enhanced by being decorated with old scythes, rakes, hoes, chains, hoops, harnesses or horseshoes. Dilapidated chicken coops, discarded furniture, old barrels and boxes, are not only an eyesore to every thoughtful observer, but an object lesson of carelessness and shiftlessness to every member of the household as well as the employés on the farm.

If any parts of these appliances or accumulations are of any value for repairing others, let them be taken apart and carefully placed in the tool-house or workshop, where they can be found readily if wanted. Let the remnants be cremated as far as possible, and the old iron turned over to the junk dealers.

The next disfigurement to our grounds is the promiscuous deposit of rubbish of all kinds,—stumps, logs, old lumber, brush and the like,—which should be reduced to ashes, either as fuel or in one general conflagration. Stones and boulders are not very attractive in large quantities around a place, and the larger share of them at least should be removed from sight.

With this elimination of unsightly objects around the home we are now in a condition to discuss the matter of improvement by planning and laying out our grounds in an attractive manner, and planting such trees, vines and shrubs as may be necessary to accomplish this result.

The construction of buildings for convenience and enjoyment is not a subject to touch upon here, for that question of itself would be enough to engage our attention for a full session.

Drives and Walks.

While the location of the buildings and their distance from the highway will to a certain extent govern the character of the approaches thereto, a few general suggestions may not be out of place here.

While we are well aware that a straight line gives the shortest distance between two points, we should not recommend following that rule in laying out our drives and foot-walks.

If the buildings are on quite an elevation above the road level the location of the driveway should be governed by the grade to be overcome, even if a much greater distance has to be covered between the two points. This brings into use a gracefully curved approach, which, as part of the plan of landscape architecture, is quite an important feature. The foot-paths, wherever constructed, will be governed largely by the same rule.

The method of road building to be adopted will be governed by conditions that will vary in different localities and on different soils. In our loamy or clayey soils we have found it possible to obtain very satisfactory drives and walks by removing the soil to a depth of twelve or fifteen inches, taking pains to leave the road-bed higher in the centre, so as to afford good drainage. We then commence filling with coarse stones at the bottom, then a layer of smaller ones, topping off with coarse gravel, with a light dressing of clay over this to aid in securing a compact surface when completed. There is something gained in this road building besides the securing of a permanent driveway that will be free from mud at all seasons.

The loam removed, if not wanted on the lawn, can be piled in some convenient place until wanted for various uses, and the excavation of the road-bed furnishes a convenient receptacle for stone, which on many a farm is a continual object of removal from field or garden.

The Lawn.

Having constructed our drives and walks, our next work is to grade the remaining grounds properly, using the best soil freely for the upper portion to insure a good growth of grass of a permanent character. After seeding and raking smoothly, a heavy roller should be used to complete the work, so as to leave the ground in a perfect condition for the lawn-mower in after years. A well kept lawn is of itself as attractive and gratifying to the owner of a home as any single feature that can be named.

Where and What to Plant.

We are now approaching a subject that is very difficult to treat upon. No two places are governed by the same conditions or possess the same surroundings. The home that we are considering as susceptible to improvement may be partially or abundantly supplied with shade or

ornamental trees of many years' growth. In this case the trees of smaller size at maturity or some of the hardy flowering shrubs may be brought into requisition in improving the grounds. If the trees already growing are confined to a few native species, like the Oaks, Elms or Maples, the variety can be increased by adding a Purple-leaved Beech, Cut-leaved Beech, or our own native White Beech. The Cut-leaved Weeping Birch in many localities proves a most valuable acquisition, while the Maple family has many choice varieties to select from. The Norway and Sycamore have a sturdy and shapely form of growth, while the Scarlet and silver varieties have a habit of rapid development. The Weir's Cut-leaf is a very rapid growing tree, and on this account may be found of service in some portion of our decorative work. The three last named, making such rapid growth annually, must be severely headed back for many years, so as to insure a strong and stocky growth that will prevent injury by the heavy winds or ice storms so common to our New England climate.

The Schwedler Maple, which presents a bright red leaf in the springtime, and the Reitenbachii, with its dark purple leaves in autumn, are very showy and interesting trees. Among the Oaks the Pyramidal Oak makes an upright, stately growth, in some respects like a Lombardy Poplar, and can be used where room will not admit of the wider branching varieties. The Golden-leaved Oak is an innovation that makes a most striking effect in contrast with the other trees.

The Poplar family have their merits where an immediate effect is desired, and the several varieties, Lombardy, Carolina, Black Italian, Silver-leaved and Golden-leaved form a very interesting group for use in certain places where a rapid growing tree seems to be demanded. In this same direction the European Larch will give quick results, and its light green foliage in the springtime is unsurpassed for beauty and effectiveness.

The Evergreen family are sometimes found desirable for screens or as a protection from severe wintry winds. They want to be judiciously planted, and usually in masses for this purpose. For the hiding of any unsightly objects, especially visible in the winter season, there seems to be nothing else so well suited to the purpose.

There are some of the species of smaller habit or growth that may be used on a limited scale in connection with the planting of our home grounds. The Dwarf Arbor-vitæ in variety, as well as the Retinisporæ, are especially desirable in the proper location. In addition to the trees of larger growth, such as the Spruce, Hemlock, Arbor-vitæ and Pines so long in general use, the Colorado Blue Spruce and Nordmann's Silver Fir are very great acquisitions to our list of Evergreen trees.

In deciding upon the proper location for ornamental trees, a few general rules may be laid down. First, study the surrounding country carefully, and decide what outlooks from windows or piazzas must be left unobstructed; leave open vistas where the views will afford pleasure; and, if in any direction there are little if any attractions for the eye, locate your trees there, either singly or in groups, as space will admit. It is often desirable to plant thickly, with a view of thinning out a part of them when they become over-crowded. But in my years of life among the trees and association with those who have a fondness for tree life and development, I find that it takes more real courage to order removed, from the lawn, a tree that has been planted with one's own hand, and carefully tended for a score or more of years, than it does to attack one's dwelling or stable, and so re-arrange and re-construct them, that there is hardly a vestige left of the original building, to mark its identity in a neighborhood. Again, having decided upon what feature of the landscape we wish to preserve unbroken, let us turn our attention nearer home to some existing conditions, that require the planting of trees to shield them from our gaze.

There may be some of the numerous outbuildings on our grounds, or perhaps on an adjoining estate, that are not particularly pleasing in their effect upon the landscape. Here a group of the smaller growth of trees, of flowering shrubs, and possibly the evergreen species, will be brought into requisition, the taller trees in the background and the flowering shrubs in the front of the same.

Occasionally we find the barnyard enclosure, where the stock are turned out for air and exercise in the winter season, to be the most conspicuous feature of the place. Here the grouping of the stronger growth of shrubs, with an occasional evergreen and some of the deciduous trees, will relieve very materially its objectionable feature.

The stone walls that are occasionally used for an enclosure, if they must be allowed to remain, can be made conspicuously attractive by planting with the Ampelopsis Veitchii, or Japan Ivy, which, in a short time, will cover it completely with its lively green foliage of varied shades.

Having thus treated the pleasing and displeasing features of our grounds, what space remains can be utilized for the planting of such varieties as will best suit our taste. The reckless method of planting indiscriminately all over the lawn is to be avoided, as is also the planting in set rows all along the walks or drives. A few groups of shrubs on the borders of the lawn, at the angles, and perhaps on the curves, or a few placed in suitable positions along the drives, with an occa-

sional clump of the smaller growing varieties near the dwelling, will be all that is needed. The great tendency is for overcrowding rather than the reverse, where there is so large a variety of beautiful shrubs and plants that can be utilized in this decorative work.

Some of these, like the Lilac, Syringa, Spirea, Weigela, Deutzia, Forsythia, Althea, Snow Balls and the like, in their great variety, although in common use for many years, still remain in favor for grouping or single planting. The Japan Snow Balls, Hydrangeas, Variegated-leaved Cornus, Golden-leaved Elder, Golden-leaved Syringas, and Spirea, Purple-leaved Hazel, Purple-leaved Berberry, Purple-leaved Plum, the Japan Rosa Rugosa, with its glossy leaves and showy buds, and an abundant variety from which to make our selections.

There are many trees of medium-sized growth at maturity that are possessed with peculiarly striking foliage, either in the color of their leaves or the wide range in their form and size. Our largest leaved tree is the Catalpa Speciosa, often producing a leaf a foot or more in diameter. This tree is a very rapid grower and produces a very showy, large-sized, white flower. The Magnolia Tripetala gives us the longest leaf, sometimes reaching from twenty to twenty-four inches in length and from eight to ten inches in width.

The Oak-leaved Mountain Ash has a very clean and symmetrical form of growth, and the flowers and berries that follow, make it an attractive tree. This tree and the Linden family seem to be disturbed by the action of borers more than any other ornamental tree that I am acquainted with, but notwithstanding this, they are worthy of giving a little attention by eradicating this pest as it may appear. The Laurel-leaved Willow has a very showy, glossy leaf peculiar to itself, while the Golden-bark Willow produces a very showy effect in the winter season, when the leaves have left the branches. The Maiden's Hair tree, or Salisburia, possesses strikingly unique fan-shaped leaves, and has a good habit of growth. The Sweet Gum or Liquid Ambar, found so abundantly in the Southern States, bears transplanting to our northern clime well and has an attractive form of leaf, which becomes very highly colored in the autumn season. The Tulip tree or White-wood of the West, is worthy of a place in our collection, both on account of its peculiar shaped leaf and its tulip-shaped flower. Experience with this tree proves that to transplant it safely, we must take trees of small size in every instance.

These are but a few of the desirable trees for ornamentation of our home grounds. The list could be extended almost without limit, would time and space allow. The same may be said of the hardy

flowering shrubs, so numerous in variety, so attractive in flower. In the case of the newly introduced sorts, many possess foliage of varied colors, thus giving us an abundance to select from in the adornment of our grounds.

As we progress year by year in this work of improvement, and become familiar with the more common varieties of flowering shrubs, we may desire to make some changes, or add to our collection some of the more rare and costly varieties, or the newer acquisitions continually being brought into the market.

The Japan Maples with their delicately cut foliage of various shades and colors are decidedly fascinating. The Rhododendron and Azalea are costly at the outset, and require the best of care to succeed, but few, if any, plants equal the gorgeous beauty of their flowers. The Magnolia family are almost as showy in flower as those just named, but must have special care in planting and after-culture till they have become firmly established. While the Rose is found growing in abundance in many places, still the large flowering sorts of recent introduction require a constant care and treatment that many are unable to give, in order to produce the large, showy blooms, of all shades and colors, that have been so great an attraction of late years.

Before leaving the question of what to plant, I would not omit alluding to some of our native plants, that possess considerable merit in this direction. Our native Mountain Laurel or Kalmia Latifolia can be utilized, and it is difficult to name a more beautiful shrub when in flower. Its bright, glossy foliage, through the entire year, produces a most pleasing effect. Our native Swamp Pink, Azalea Nudiflora, white and pink, are also worthy of utilization in our work. These, with the Kalmias, must be removed with the earth retained about their roots to succeed well. The Clethra Alnifolia gives a fragrant white flowering shrub, and a small clump in some suitable location would be generally appreciated. For a background against some fence or building, a group of wild Sumach will give a fine effect in the flower and leaf in the autumn season, and for climbing vines to cover hedges, boulders or walls, the Bitter Sweet, Woodbine and Clematis possess a degree of merit that entitles them to our endorsement for these purposes.

Recreation Grounds.

Before leaving our home grounds for the roadside question will it not be well to consider for a moment something in the way of pleasure-grounds for the children of the household? Cannot a small space be given over to their use and graded for a tennis court or croquet

ground? Possibly some groups of trees or a grove may be found within easy access for use in this direction. Let this be cleared of underbrush, stumps and stones, or other obstructions smoothed off, tables erected and seats constructed here and there among the trees. Here the hammock should find its appropriate station, a swing be constructed, with a view to safety, and numerous other appliances provided where child-life would find great enjoyment, and adult-life take great comfort in having placed at their command such opportunities for harmless and healthful recreation.

Our Roadsides.

Three distinct features enter into the improvement of our roadsides: First, a clean carpet of grass from the travelled roadway to the boundary line, excepting so much as is needed for a good foot-path, which is the second feature, while the planting of trees for shade and shelter is the remaining attraction. Here is a good opportunity for coöperative effort. In many places our village improvement associations are doing a noble work, and what they have accomplished in late years within and near the villages is having a very stimulating effect upon those living more remote from the village proper. The spirit of coöperation should exist between the property owners on one hand, and the authorities, to whose care the maintenance of good roads is entrusted, on the other.

If our roadsides are to become the dumping-ground for all the refuse material that it is found necessary to remove from the travelled highway, or if the trees that have been planted and tended for years are to become the victims of the death-dealing road machines, or ploughs and scrapers, we have little encouragement to direct our efforts towards the improvement and beautifying of our roadsides. On the other hand, a general plan of roadside improvement, in which all land owners should take a common interest, and which can be done little by little each year when the regular farm work will permit devoting a few days at a time with team and men, will in the course of ten years produce an effect upon the whole neighborhood, and an increase in value of all property affected far in excess of the first cost of the improvements.

This work hardly needs any advice from me as to the best methods of procedure. If the ground is covered with brush, remove it root and branch. If a promising young tree is found growing in the right place, preserve it. If trees are already there of natural growth and too near each other for proper development, reduce the number so that

they shall not be nearer than thirty-five or forty feet. If stumps and stones encumber the ground, remove them or bury them out of sight. I should not recommend cutting away brush that would leave the rocks and rubbish exposed to view for any length of time, for, in this case, the "remedy would be worse than the disease," but make thorough work each season as far as you go, and there let it rest until another year. Having disposed of all obstructions, the grading and finishing work comes next, and then, by seeding it to grass, our desired object has been attained.

The building of the foot-walk and planting the trees is the next stage of progress, and the width of the walk will have to be governed somewhat by the width of the roads. Usually six feet or more in width can be used for this purpose. Grading, smoothing and gravelling are the three requisites for completing this work, and then we are ready to locate and plant our trees.

Where Shall We Plant Them?

Three positions are to be considered in this direction. The most satisfactory effect is produced by planting them on the edge of the foot-path, five to six feet from the boundary line. This means protection to the trees by guards, which must be maintained for years to come, and even then are subjected to more or less injury by being used as hitching posts for horses, or subjected to wreckage by the hands of careless teamsters. The second position is one foot from the wall or fence; here there is little danger from teams or road repairers, and if the permanent grade of the road is fixed before the trees are planted their permanency and safety is assured. The third location is one foot inside the road boundary line, which brings the trees under the exclusive care and protection of the owner, and there is no risk whatever of injury from causes that exist when the trees are located within the bounds of the highway.

What Trees Shall We Preserve and What Shall We Plant?

As already noted, if we find in the clearing-up process of our roadsides trees already growing at a proper distance from each other, and located where it is desirable for them to remain permanently, they should remain undisturbed if of a suitable variety.

Under this classification I should name, as the most desirable trees, the White Oak, American White Beech, Rock or Sugar Maples, American White Elm, when space is ample, and American White Ash.

The objection to the Red Oak and Basswood or Linden is their sus-

ceptibility to the attack of the borer; the Poplars and White or Red Maples, their liability to injury or wreckage by ice storms.

The Red or Slippery Elm, if discovered by travelling man or boy, will not escape the robbing of its bark, and the Chestnut and Walnut become the victims of severe clubbing and injury to their trunks by pounding without mercy to induce a few stray nuts to leave their snug quarters before being ordered out by the autumnal frosts.

For varieties to form new lines on the roadside I should name the Rock or Sugar Maple, Norway Maple, taking care to thin the branches of this variety as the tree advances in years, so as to avoid too dense a head. The American White Ash will thrive in some instances where the Maples do not succeed. The American Elm may be used where the roads are seventy-five or more feet in width, but never on our narrow thoroughfares. Although the old saying holds good that "he who plants an oak plants for posterity," I believe the White Oak should be encouraged for this roadside planting, and also the American White Beech, two noble and stately trees that future generations would value most highly, even though we ourselves are not permitted to see the fruit of our labors.

There is little further to be said on the subject of roadside improvements. Our object lesson is but to contrast the long stretches of improved roadsides found in many New England towns and villages, and the unimproved portions, so largely in the ascendancy, and which it may be hoped by agitation, coöperation, and some personal self-sacrifice, may sooner or later give way to the permanent improvement of our roadsides that shall reflect credit upon the workmen in the years that are to come.

I am not unmindful of the fact that the expense incurred in these proposed improvements will be maintained by many as being beyond their ability to meet. If this was to be the work of but a single season it might involve an expense that should not be incurred in justice to the other needy expenditures in the farm management. But this is not our intention in advocating these improvements. Our first suggestion is to map out a definite plan of the grounds in accordance with such suggestions as have been offered, and then each year devote some time and money to its accomplishment. There are many days in the course of a year that the farm help, and a team if necessary, can be spared for this work without any detriment to the other interests of the farm.

If one takes a review at the close of each year, of the permanent improvement he has made on his farm lands by reclaiming unimproved

land, in the removal of stones and stumps, clearing of brush, ditching and draining, building or rebuilding of walls or fences, improvements of the farm buildings, and addition to the stock or implements of husbandry, he feels that he has made some perceptible progress. But, if we will give it a second thought, we will find that the principal object has been to increase the facilities for securing a greater revenue from the farming operations.

Would it not be well to direct some of this thought and energy to the improvement of the home ground, where the advantages and pleasures it affords the occupants of the home are not measured by dollars and cents, but by an appreciation, to which the home-makers within bear their constant testimony, and to whom we are under every obligation to contribute our best efforts to secure to them the greatest comfort and happiness.

I have not touched upon the orchard and fruit garden, and the part they contribute to the household economy. Other writers and speakers have been over that ground times without number, and it must be admitted, without appearing to be discourteous, that in arranging subjects for consideration at our State Board meetings, Institutes, Farmers' Clubs, and Grange meetings, the tendency has been almost wholly in the direction of treating upon those questions that have to do with our material prosperity, while the home and its comforts within, and attractions and external surroundings, are rarely brought forward with that prominence that their importance would seem to demand.

If I may be permitted to allude to matters somewhat personal in their nature, I will say that these noble examples of devotion to tree life that have come under my observation in my travels, and particularly in the "City of Elms" and all up and down the beautiful Valley of the Connecticut, have been an inspiration to me to contribute my share in advancing this line of work whenever and wherever an opportunity afforded. I may here add that I have not had to wait long for an opportunity to offer, for I was many years ago called to accept a position on the Board of Parks Commissioners of my own City of Worcester.

One important feature of this work is the planting of the shade trees along our city thoroughfares,* and since my first connection with this work over thirty miles of streets have been covered, using over eight

*To avoid misapprehension, it may be well to state that the planting of Shade-Trees and their supervision is vested in the Parks-Commission of the City and cannot be delegated. There has been a contract with Mr. Draper for years and it is due to him to say that it has been fulfilled faithfully.

E. W. L.

thousand trees. Those first planted, some fifteen years ago, have already acquired sufficient size to afford a most acceptable shade, as well as marking a great improvement in the appearance of our highways.

I must confess that my attachment to these trees has become almost a passion, and their injury or destruction, from any cause whatever, touches with sadness the finest sensibilities of my nature; and I must still further confess that in all the varied activities which constitute my life's work there is nothing in which I take greater pride and comfort than in watching the rapid growth of the trees and the development of beautifully shaded streets in my own city, in the work of which it has been my privilege so largely to share.

What then is the effect of this work upon our lives and that of others? Hon. B. G. Northrup of Connecticut has well answered this question in these words,—"The hope of America is the homes of America. It has long been my ambition to improve the homes and the home-life of our industrial classes, and help them to realize that the highest privilege and central duty of life is the creation of happy homes, for the home is the chief school of virtue, the fountain-head of individual and national strength and prosperity. It is a worthy ambition to surround one's home and children with such scenes and influences as shall make the every-day life and labors brighter and happier, and help one to go sunny and singing to his work. Our youth should early share in such efforts for adorning the surroundings of their homes and planting trees by the wayside."

Said Oliver Wendell Holmes in a letter, "I have written many verses, but the best poems I have produced are the trees I have planted on the hillside which overlooks the sinuous Housatonic."

Said Washington Irving, "There is something nobly simple and pure in a taste for the cultivation of forest trees. It argues, I think, a sweet and generous nature to have this strong relish for the beauties of the forest. There is a grandeur of thought connected with this part of rural economy. It is, if I may be allowed the figure, the heroic line of husbandry. It is worthy of liberal and free-born and aspiring men."

In closing I can think of nothing more appropriate than to make use of a few verses from one of Whittier's poems:—

"O, Painter of the fruits and flowers,
We thank thee for thy wise design
Whereby these human hands of ours
In Nature's garden work with thine.

"And thanks that from our daily need
The joy of simple faith is born;
That he who smites the summer weed
May trust thee for the autumn corn.

"Give fools their gold and knaves their power;
Let fortune's bubbles rise and fall;
Who sows a field or trains a flower,
Or plants a tree, is more than all,

"For he who blesses most is blest;
And God and man shall own his worth
Who toils to leave as his bequest
An added beauty to the earth.

"And, soon or late, to all that sow,
The time of harvest shall be given;
The flower shall bloom, the fruit shall grow,
If not on earth, at last in heaven."

23d January, A. D. 1896.

ESSAY

BY

DR. THOMAS C. MENDENHALL, WORCESTER, MASS.

Theme:—What We Don't Know About the Weather.

METEOROLOGY is the oldest of the sciences. Weather phenomena were noted by the ancients, as correct predictions were of advantage to them in hunting and fishing.

The study of the weather antedates the science of astronomy, which is popularly thought to be the oldest of the sciences. Weather calculation is the most imperfect of the sciences, if indeed it can be considered a science at all. This is due to the difficulties of the problems confronting those who deal with the study. There are but few principles underlying the subject.

The earth's core is in an intensely heated condition. For example we will compare the earth to a globe eight inches in diameter, one inch corresponding to each one thousand miles of the earth's thickness. If we should penetrate fifty miles into the earth's surface we should find it in a heated condition or in a fused state. This would mean one-twentieth of an inch of our globe's thickness. Notwithstanding the great mass of heated matter within the earth we receive practically no heat from this source. This is due to the fact that the earth is such a poor conductor of heat. Solar heat is what we have to deal with in our weather phenomena.

Mars, the nearest of our planet neighbors, probably has no atmosphere, and the inhabitants have to content themselves with some other topic of conversation than the weather.

The air on the surface of the earth is commonly said to extend forty-five or fifty miles into space. In fact it extends much farther, but in a greatly rarefied condition. The fact of its existence at such a distance is proved by meteors, which acquire an intense heat by

friction with the atmosphere through which they pass. One-half of the total body of air is probably within two or three miles of the surface.

The existence of the warm belt around the equator produces circulation. Upon this fact the phenomena of the weather chiefly depend. When a body moves from the poles to the equator it has a tendency to be deflected to the right, and when it has passed the equator it moves to the left.

The terms cyclone and tornado are often confused. The tornado is small in comparison and local in its field of operations, extending over a strip eight or ten miles wide, whereas the cyclone may have a diameter of five hundred or one thousand miles. By these we can ascertain the storm centre.

The weather bureau gets a higher credit for forecasting than it really deserves. When it claims a percentage of eighty or ninety in its verifications the facts are not fully stated. Changeable as the weather is, it often remains the same for a week at a time. California has but two great changes in the year, and the officers there get a percentage of ninety-five.

If you want to be called weather-wise predict that the weather will be the same to-morrow that it is to-day. If sure there are to be changes you will often hit it wrong, but if the rule is faithfully followed the predictions will prove true oftener than not. In forecasting there is quite an element of guessing.

It is an unfortunate fact that most of the observations are made in cities and towns. In large cities the smoke and hot air issuing from the tall chimneys heat the atmosphere in the immediate locality, and the department gets false data to work from. There have been propositions to build towers or to send up balloons to secure more accurate observations.

Among the things we don't know about the weather is how to make long forecasts. Efforts are now being made to get forecasts thirty hours ahead. Some people think the department ought to tell what the weather is to be for a month to come.

Weather proverbs have come down from the conditions of objects and the actions of animals. One proverb reads: "Do business with men when the wind is in the north." It is claimed that men are then in a better humor. When cats sneeze it is said to be a sign of rain. When cats are basking in the sun in February they will go to the stove in March, runs another proverb. Cats snoring is said to be a sign of rain.

Another proverb is to the effect that if on Candlemas day the ground-hog comes out there will be snow or rain, and, conversely, if he stays in his hole, it will be fair. This gives rise to the expression of the ground-hog being afraid of his shadow.

Squirrels storing away nuts in large quantities is said to indicate the approach of a hard winter. An authority who has made investigations for a period of twenty years declares there is nothing in it. Squirrels store up an abundance when there is an abundance and it is readily accessible. The saying, "Everything is lovely when the goose hangs high," has reference to the weather. Hangs is a perversion of hawks, and this from honks, meaning that when the wild goose makes his cries high in the air the weather is invariably clear.

There is no relation between the weather and the phases of the moon, in spite of the popular superstition. Some farmers have held to the belief that in certain phases of the moon the lower rail of a fence being laid will sink into the ground, while in others it will remain on top. Some authorities say that when the horn of the moon dips down it will shed water, while others say it is a sign of good weather. The only effect of the moon is its influence on the tides.

A great deal of importance is attached to lunar halos, the rings surrounding the moon, the saying being that the number of days intervening before a storm depends upon the number of stars within the ring. There is something in the rings about the moon and sun as they indicate an atmospheric disturbance which often results in a storm. There is no importance attached to an equinoctial storm. There is no relation between the weather and the equinox.

Spots on the sun are found to grow and diminish. This coincides with the variation of the magnetic needle, showing there is an intimate relation between them. These spots are not weather phenomena. A great deal of undue importance was formerly attached to these cycles, some declaring that they corresponded with large yields of wheat in India, with the appearance of certain diseases, and the prevalence of marriages.

Deforestation does not affect the quantity of rainfall, but has much to do with the distribution. The soil is held together by the roots and this holds the water, which makes the supply of moisture more regular. When the trees do not exist the water runs off more readily.

It is said there has been great changes of climate within a few years. Many think the winters are milder than formerly. This idea is erroneous. The winters remain substantially as they were, but we

are accustomed to bunch together phases of our early experience, and the error is with us. The mean temperature is the same as one hundred years ago.

Students have studied astronomy for the love of the science and not for the money there is in it. Now we are accustomed to give up everything in our weather researches to that which will bring in an immediate return of cash. This is a foolish policy. If the study of the weather is pursued persistently as a science for a few years, it can be made a science.

30th January, A. D. 1896.

ESSAY

BY

PROF. G. E. STONE, MASSACHUSETTS AGRICULTURAL COLLEGE.

Theme:—Parasitic Fungi Affecting the Horticulturist.

Two of the most important branches of science associated with Horticulture are botany and entomology. Indeed, what science there is connected with Horticulture belongs wholly to botany, and inasmuch as Horticulture concerns itself largely with matters of function rather than those of structure, it would naturally fall under that branch of botany known as vegetable physiology. But some may maintain that Horticulture is not a science, but an art or a business. This may be true, but this business requires art, which manifests itself in the gardener's skill, and behind this art there are scientific principles which have been unconsciously worked out and closely followed for generations with the aid of that instructor known as intuition. This skill or intuitive knowledge is the most valuable possession which a gardener may lay claim to, and is a form of knowledge which cannot be obtained from either books or colleges, but only by the direct observation of plants. To illustrate more definitely what I wish to infer, I will state that every floriculturist knows that it requires some skill to grow roses, and yet if a novice were to read all the hand-books on the subject of rose-culture ever printed he might not be able to grow a single healthy rose.

In this respect the relationship between the art and science of Horticulture resembles that between art and science in general. If it should happen from any cause whatsoever that all of our knowledge pertaining to the art and skill employed in Horticulture should be suddenly obliterated, and nothing remaining but the scientific principles found in books, any attempt made in the growing of fruit or vegetables requiring skill would result in a bungling affair, and they would hardly be subjects for a premium at a horticultural exhibition

if the same high standards of excellency were required that are in use to-day. It is with no disparagement to science, however, when I state that of the two forms of knowledge the art (which is that in which the gardener excels) is the more important to the horticulturist, yet one may be an expert in one of these branches without knowing much about the other. The excellent motto which the Royal Agricultural Society of England adopted many years ago, namely, "Practice with Science," appears to me to be the best one to follow, and one which has more meaning to-day than at any other time in the history of Agricultural or Horticultural practices, and what holds good to-day will possess more significance in the future, for the resources of scientific inquiry pertaining to Horticulture are by no means exhausted.

It is only necessary for me in calling your attention to this matter to point out a few lines of scientific investigation which have already affected horticultural practices, and which will undoubtedly produce other beneficial results in the future. Of these investigations the study and treatment of plant diseases has been so far as fruitful as any to the horticulturists, and the use of the electric light in forcing lettuce has shown beneficial results.

Valuable results may be expected in the future from the study of plant-breeding, in the improvement of varieties, development of seedless fruits, and a large field is open in the study of the function of plants, or in vegetable physiology, not only for the purpose of being able to grow more healthy plants, but to actually increase their assimilative processes which will result in their greater growth. It is my purpose to consider this afternoon some of the relationships of science to Horticulture as illustrated by fungus diseases. Fungus diseases affecting our cultivated plants have been known and observed from time immemorial. Way back in the deepest depths of barbarism when man first commenced to subdue some native plant, the presence of a smut or mildew was undoubtedly interpreted, as it was a few centuries ago, as the wrath of the gods for some offence. We find, however, in the Old Testament no less than six distinct references to mildews and blasting.* Among the Greeks they are mentioned in the works of Democritus, Theophrastus and Apuleius, and among the Romans references to them can be found in the works of Cicero, Pliny and Horace.

Coming down to more recent times, to the early days in New England, we find it stated by John Josselyn, an early English traveller,

*Gen. xli. 6-27; Deut. xxviii. 22; Amos iv. 9; I. Kings viii. 37.

that there were two diseases peculiar to our fruit trees, which he designated as "Meazels and Lowsiness,"* and there is reason to believe that the corn smut, which never appears to cause a very large amount of destruction, at least here in New England, has probably existed for many centuries, and was undoubtedly a legacy handed down to us by the Indians, and so likewise was the rust and smut of the wheat a legacy from Europe in colonial days, as it has been subject to these troublesome diseases for a long time here in Massachusetts.

Even so far back as 1664 it is recorded that "a greate and dreadful comet, or blazing-star, appeared in the south-east in New England for the space of three moneths, which was accompanied with many sad effects, great mildews, blasting in the Countrey the next summer,"† and about one hundred years later, 1754, "an idle opinion obtained among the vulgar that since the execution of the Quakers [1659] wheat was always blasted."‡

These statements are sufficient to show that the early settlers were much vexed with the presence of plant diseases, and a perusal of the lengthy sermons and prayers of those by-gone days, whose scope was limited only by the horizon of experience, would occasionally reveal to us the sincere pleadings addressed to a Divine Providence for a deliverance from these pests.

It has been believed in New England for a century or more that the barberry bush is in some way connected with the blasting of wheat. According to Dwight,§ "wheat near the barberry was always blasted, and always in the direction of the wind"; and in another place he states: "The barberry bush in New England was generally believed to blast both wheat and rye through the very copiously emitting of a pungent effluvium." It was not uncommon in those days to

Note.—John Parkinson, an old English writer, mentions canker in trees in 1629. He states: "The canker is a shrewd disease when it happeneth to a tree; for it will eate the barke round, and so kill the very heart in a little space. It must be look into in time before it hath runne too farre; most men doe wholly cut away as much as is petted with the canker, and then dresse it, or wet it with vinegar or cowes pisse, or cowes dung and urine, etc., untill it is distroyed, and after healed againe with your salve before appointed."

* The way to cure them when they are lowsie is to bore a hole into the main root with an Augur, and pour in a quantity of Brandie or Rhum, and then stop it with a pin made of the same tree.—*Josselyn Voyages*, 1638-1663, p. 146.

† Josselyn's Voy., p. 206, also pp. 207 and 208.

‡ Neal's Hist. of New Eng., 1754.

§ Dr. Timothy Dwight's Travels in New Eng., 1821, vol. 1, p. 382.

ascribe many natural phenomena as accountable to effluvia. The philosophic though dogmatic Jonathan Edwards* believed that each planet emitted different effluvia, which he conjectured had great influence on plants and animals. We do not wish, however, to go into a discussion of these ideas, or even of the Platonic or idealistic conception entertained by Cotton Mather and others of that time, who believed that everything in the nature of a blight was created for the special purpose of rectifying the unrighteous conduct of wicked men, and that the demonstration of Divine Providence in remarkable mercies and judgments were only the natural rewards of the just. Suffice it to say that the immediate cause underlying these disorders we now well understand, and the pungent effluvium or infectious element referred to on the barberry is nothing more or less than the manifestation of the normal processes of reproduction and propagation which take place in the life-history of the fungus known as Puccinia graminis; and, with due respect to the metaphysical speculations and unphilosophical deductions of our revered though well-meaning ancestors, we must add that it is now generally believed that the blasting of wheat has ever had but little connection with the "great comet or blazing star of 1664," or with the persecution of the Quakers in 1659, but is due to wholly natural causes which manifest themselves in diversified form according to perfectly natural changes of condition in our environment.

The fungous diseases of cultivated plants cause annually an enormous loss to American agriculture, a large proportion of which might be prevented by the use of remedies which are known to be effectual. It is difficult indeed to determine definitely the amount of damage inflicting a certain crop by fungous enemies, especially where we have to deal with large areas, but it is safe to say that in most instances it is much greater than is ordinarily supposed. In some years the blast to wheat and corn alone by fungous diseases in the United States is estimated at $200,000,000, and according to Prof. Burrell the average annual loss due to rust of wheat in Illinois is estimated at one-half million dollars. It is estimated that the average yearly loss of oats in the United States due to smut equals or exceeds one-tenth of the entire crop. According to Prof. Kellerman the loss in Kansas in 1888 was nearly one and one-half million, and in 1889 at about one million; and according to Prof. Arthur the loss in Indiana from the same cause in 1889 was about $800,000, and in 1890 somewhat over

* Life of Jonathan Edwards, 1830, vol. 1, p. 734.

$600,000. The loss which results to fruits from fungous diseases is even greater still. Several years ago Prof. Burrell declared that could the losses due to rots and blights in our fruit plantations be exactly expressed in dollars and cents it would frighten cultivators from their business. The loss of peaches from the brown rot on the Chesapeake and Delaware peninsulas in 1888 was estimated by competent observers at from $400,000 to $600,000, and that annually caused by the so-called peach-yellows must be enormous. It is estimated that four diseases of the orange and lemon cause annually an aggregate loss of fully $250,000, and the loss from apple-scab ranges from one-sixth to one-half the entire product. The strawberry blight in many localities often ruins the entire crop; the rots and mildews affecting the grape have led to the extermination of hundreds of vineyards, and according to a recent report on the new Californian vine-disease the loss has reached within a comparatively short time the stupendous sum of ten million dollars. Many other like estimates might be given, but this I am sure is enough to give us some idea of the extent of the ravages caused by these organisms.

Most of our plant diseases are of recent origin, and the number of new ones which occur—some of which are extremly disastrous—render it difficult indeed to keep pace with the advancing knowledge. For example the orange-blight now affecting Florida has come to public notice only within the last three years. The vine disease of Southern California, which has previously been mentioned, and which blasted so many of its vineyards, was unknown a few years ago. The carnation rust, which was introduced from Europe, was first noticed in this country by Prof. J. C. Arthur about six years ago, and is now causing considerable trouble to our floriculturists. The leaf-spot of the potato was first observed about eight years ago in Missouri. The hollyhock rust was introduced from Europe in 1886. The pear-blight commenced to show its ravages only a few years ago, and the peach-yellow, though well known for many years, has only shown its universally disastrous effects within the last two or three decades; in short it may be said that the greater number of diseases which are peculiar to our cultivated plants have made their appearance, or at least have assumed disastrous proportions, within the last twenty-five years. It is within the last fifteen years however—and the enormous increase in plant maladies seemed to necessitate it—that any serious attempts have been made in the United States to apply remedies for fungous growth, with the discovery and introduction of such fungicides as the Bordeaux mixture, eau celeste, am-

moniacal carbonate, kerosene emulsion, sulphate of copper solution, etc. There has arisen a complete change in our methods of growing fruits and vegetables. Before going into a description of plant diseases let us consider some of the characteristics of fungi in general. The fungi belong, as you all well know, to a low order of plant life, although resembling in their color and mode of life the Indian-pipe, dodder, broom-rape and beech-drops among flowering plants. They either thrive upon the juices of other plants, when they are termed parasites; or else upon decaying organic matter, when they are known as saprophyetes. They contain no chlorophyll or green coloring matter, and hence they are unable to manufacture starch by means of the kinetic rays of the sun out of carbonic acid and water. Instead of giving off oxygen and absorbing carbon dioxide, as is the case with all green plants in sunlight, they continually throw off carbon dioxide, and in this respect their metaholic processes coincides with that of animals. [At this point the speaker briefly referred to the systematic position and mode of reproduction of fungi, which was rendered clear by means of a diagram representing the classification of plants.]

The total number of fungi in the world, according to Barcardo, on a determinate basis is 40,000 up to 1892. The number which probably exist in Worcester County is not less than fifteen hundred. Fortunately, however, all the species of fungi are not injurious. The rose alone is subject to 165 species of fungi, although there are not over half a dozen which cause any serious trouble to growers. About 200 species of fungi attack our cultivated plants, and are troublesome enough to have received treatment. The number of bacterial diseases so far described affecting cultivated plants is about twenty-five.

[The essayist then devoted some time to a general description and mode of treatment of about 35 common plant diseases, which was illustrated by 23 diagrams representing both their marroscopic and microscopic characters. What follow is a condensed and tabulated account.]

Cabbage, Turnip, Cauliflower, Etc.

Club-Foot (Plasmodiophora Brassicæ). Occurs as tubercles on the roots.

Treatment.—Rotation of crops. Also air-slacked lime at the rate of 75 bushels per acre has shown beneficial results.

Potatoes.

Mildew or Rot (Phytophthora infestans). Downy appearance on under side of leaf, and rot in tuber.

Early-Blight (Macrosporium Solani). Small, circular, whitish spots on leaf, usually perforated.

Bacterial-Blight. Develops throughout the plant, which causes it to wilt and die.

Treatment.—Bordeaux Mixture is a remedy for the three preceding diseases. When applied every two weeks it has given an increase of 65 per cent. in the yield over that of the untreated.

Scab (Oospora scabies). Occurs on the tuber as a corky growth.

Treatment.—Soak seed potatoes for 1½ hours in a solution of Corrosive Sublimate in water of the strength of one per cent. or 1-1000 parts, after which allow them to dry, then cut and plant. This treatment kills all of the spores and the solution can be used over and over again. Inasmuch as Corrosive Sublimate is exceedingly poisonous, care must be exercised in handling, and only wooden vessels should be used for the solution. Other preventative measures are: Plant in soil free from scab. Use seed free from scab. Not use manure where scabby potatoes have been fed to stock. Use fertilizers. Dig early. By using these precautions 98 per cent. of the potatoes have been saved from scab.

Tomato.

Black-Rot (Macrosporium Tomato), (Fusarium Solani). Occurs in the fruit in the form of large brownish-colored, decayed spots.

Treatment.—Experiments in which the plants were treated with the Bordeaux Mixture have resulted in a saving of all but four per cent., whereas similarly untreated plants showed a loss of sixty per cent.

Scab (Cladosporium fulvum). Common on greenhouse tomatoes where it occurs as large, brownish or purplish downy spots, on the under side of the leaf.

Treatment.—Bordeaux Mixture recommended.

Celery.

Leaf-Blight (Cercospora Apii). First appears as small, yellowish spots upon the leaves, which finally enlarge and run together, causing the leaves to turn yellow and brown, and eventually killing them.

Treatment.—Grow in moist locality. In case the disease occurs under these circumstances, apply some standard fungicide (Bordeaux Mixture) during the younger stages of development of the plant.

Leaf-Spot (Septoira Petroselini, var. Apii). Characteristic watery spots occur on the leaves, which eventually assume the form of black dots. Common in hot-bed plants.

Treatment.—As in the preceding. Select unspotted seed.

Strawberry.

Leaf-Spot (Sphaerella Fragariæ). Small purplish or reddish spotted leaves.

Treatment.—Spray the plants with the Bordeaux Mixture very early in the spring, and again when the blossoms open. After harvesting the fruit the old foliage can be removed and destroyed.

Pear.

Leaf-Spot (Entomosposium maculatum). Attacks the leaves, stems and fruit. Occurs on the leaves as reddish brown spots which eventually cover large areas, and often defoliating the tree, and upon the fruit as reddish spots which later turn dark. Also attacks the Quince.

Treatment.—Spray with Bordeaux Mixture as soon as leaves appear and repeat the same every two to four weeks, according to weather conditions, until August. If later treatment is required use Ammoniacal Carbonate of Copper one ounce to twelve gallons of water.

Fire-Blight (Micrococcus amylovorus). Characterized by the almost instantaneous dying of the leaves and branches. Also common in the Apple, Quince, etc.

Treatment.—No remedy is known except cutting away and burning the dead branches.

Apple.

Scab (Fusicladium dendritium). Occurs in the fruit and leaves, appearing in the latter as black, circular spots one-half inch or less in diameter.

Treatment.—Spray with Sulphate of Copper when flower buds are swelling, then with Bordeaux Mixture just before blossoms open and again after blossoms have fallen.

Rust (Roestelia pirata). Occurs in both fruit and leaves as bright yellow-fringed, cup-like growths.

Treatment.—Spray with Bordeaux Mixture as soon as leaves appear. One other treatment is sufficient.

Black-Rot (Sphaeropsis malorum). Rotting of fruit.

Treatment.—Same as the two preceding at fruit, but two treatments should be applied after the fruit has set.

For more details connected with spraying, the bulletins issued from the Hatch Exp. Station should be consulted. These are furnished free to all citizens of the State, and contain a spraying calendar, not only for fungi, but for insects.

Peach.

Fruit-Mould (Monilia funtigena). Attacks the fruit, which becomes prematurely decayed, and is covered with an ash-colored mould.

Treatment.—Two or three applications of Ammoniacal Carbonate solutions after the fruit has formed is usually sufficient.

Cherry.

Fruit-Mould. Same as Peach.

Plum.

Fruit-Mould. Same as Peach and Cherry.

Black-Knot (Plow-right in morbosa). Large black excrescences on the branches.

Treatment.—Very early and subsequent sprayings partially control it. Kerosene emulsion will destroy the half-mature knots should they appear. Mature ones should be removed with the branches that bear them.

Grape.

Downy-Mildew (Peronospero Viticola). Downy whitish areas on under side of leaf.

Powdery-Mildew (Uncinula spiralis). Whitish powdery spots in young shoots and upper surface of the leaves.

Black-Rot (Laestadia Bidwellii). Attacks most disastrously the nearly mature fruit, which becomes spotted and shrivelled.

Anthracnose (Spharelima Ampelinum). Attacks the leaves, stem and fruit. Appear as circular brownish dots, with purple margin and whitish centre.

Treatment.—Spraying with the Bordeaux Mixture three or four times during the season has proved very successful for all diseases of the grape. The first application is made before the buds unfold, the last when the fruit has set. Further treatment consists in one application of Ammoniacal Carbonate of Copper at the time when the fruit commences to color.

Rose.

Black-Spot (Actinonema Rosæ). Characteristic blackish spots on the leaves, whitish margin.

Treatment.—Sulphate of Copper checks the disease if applied early.

Mildew (Sphaerothua pannom). Whitish mildew growths on the leaves, which causes them to curl.

Treatment.—Sulphur fumes, and also as a powder is most frequently used.

Rust (Phungmidium muconatum) and (P. speciosum). Common on outdoor roses.

Treatment.—Spray with Copper Sulphate very early in the Spring. Subsequent treatments can be made with Bordeaux Mixture.

Carnation.

Rust (Uromyus canjophyllium). Attacks the leaves very disastrously. Easily recognized by the elongated ruptured areas containing reddish spores.

Treatment.—No good remedy can as yet be recommended. Although whatever treatment is applied it must be made before the rust has made its appearance. Much trouble can be saved by selecting unsusceptible varieties.

Two other diseases are common in the Carnation which are known as Anthracnose and Spot. What is stated under treatment for the Rust applies here also.

Dumping Fungi (Pythium De Baryanum) and (Botrytes vulgaris). These fungi are very common in hot-beds and greenhouses. They can very largely be controlled by conditions of temperature, light, and moisture.

6th February, A. D. 1896.

ESSAY

BY

MISS SARAH E. DOYLE, PROVIDENCE, R. I.

Theme:—The Highest Mission of a Horticultural Society.

MR. PRESIDENT AND MEMBERS OF THE SOCIETY.—This city is to be congratulated for having a Horticultural Society whose members are interested in the objects for which the Society is established, and willing to devote time to the advancement of its interests. By its efforts the wilderness and the solitary place may be made to blossom and become sources of pleasure to the eye and health to the whole body. Certainly one mission of such a society is accomplished, if the common fruits by cultivation develop into the finest specimens of their species, if new hues and charms are added to the flowers that have bloomed in wild luxuriance by the wayside.

Beautiful and delicate as the wild rose is, we do not feel like paying homage to it, as its cultivated and queenly relative, the "American Beauty," almost incites us to do. Our mother Eve would not be regarded as so weak, if the apple offered her had been the Rhode Island Greening, which indeed might have been a temptation. That, however, has never brought woe into the world. How could it? The value of constant effort directed to make every fruit, every vegetable, every flower, as perfect as man can by study and work produce, should be recognized and appreciated. It is one of the evidences of man's kingship over the material things of the earth, for the skilled florist to be able to have, as it were, a magic wand which he but waves over the common and ordinary plants for them to change, so that they gladden and delight by their exquisite beauty.

Looking upon the exhibition of a horticultural society, where rare and graceful ferns rest the eye, where gorgeous chrysanthemums awaken admiration, where the queen of flowers—the rose—makes us linger in her presence, we ask whether the imagination of a Milton

could picture fairer flowers for Eden! If such results come from the influence and instruction of a horticultural society, is there no other mission within its sphere of work? The answer is that it ought to foster a wider love of the beautiful than exists, for the sake of beauty, and not for the sake of dollars and cents; it must aim to educate the young to enjoy and to work for flowers; it must quicken all to the spiritual significance of nature. The world is given over to the worship of the material things which conduce so largely to bodily comfort and luxury. We need not go the extent of Ruskin in denouncing the introduction of machinery, but we do need to strive to overcome the tendency of looking at things from a purely mercenary point of view. What better way can this be counteracted than by cultivating a love of nature in all its manifestations. To but few is it given to visit the grand and beautiful places of the earth—for *all* flowers bloom by the wayside and in gardens, speaking a language known to him who loves them. The highest mission of a horticultural society is to lend its strongest influence to the educating of children to a love of flowers which will lead them to be willing to give time and labor for their cultivation.

At a horticultural exhibition we see the rarest plants which the conservatories of the wealthy can obtain, the products of hot-houses, whose owners, for the sake of business, vie with each other in displaying the results of their skill. Their rare exotics adorn the tables of the rich, or the weddings of the millionaires; while the lilies or violets that ought to bloom only for those who love them are used to assist in a vulgar display. Rarely at these exhibitions is there any place for flowers that have been watched and cared for by some tender lover, for whom "beauty is its own excuse for being"; or if such are sent they seem out of place by the companionship of their more gaudy and imposing relatives. Committees that award the prizes look upon them very much as "poor relations" are regarded in society. Rather should they be placed in a section where they do not apparently suffer by comparison, and where the contributor may feel that humble efforts in flower culture are appreciated and encouraged. A beneficent work for this Society to do is to publsh lists of plants that will grow in small yards where conditions are unfavorable for many varieties of plant life, and yet where children by care and labor could make some flowers grow. It can do more than this—it can urge upon those favored by fortune to give from time to time rose-bushes and hardy shrubs suitable to grow in dooryards to such children and adults who would show sufficient interest to care for them. Doubtless many a florist

throws away cuttings that distributed through the right hands would be the means of brightening many a home. If the children of this community learned that this Society offered prizes for gardens cultivated by them in common places, that a committee would visit these yards to judge of the work done, it would be an incentive to many an idle boy or girl to devote time to gardening, that otherwise would be spent in what can be characterized by no other word than "loafing." The improvement in the grounds of our railroad stations in country places is due to prizes, and though it would be a higher motive for the station master to make his grounds attractive from a love of the beautiful rather than for a prize, still to the looker-on the lesson is taught that gardens are possible even in unpromising situations and are enjoyable. A society that undertakes such work as has been suggested must have a committee that would enter upon it sympathetically, assisting the amateur gardeners by advice, by judicious gifts of plants, by heartfelt encourgement. It is not denied that many children may not care to have gardens, that there is little time for those whose lives are largely given to drudgery to do more than labor for their daily needs; but these conditions do not lessen the responsibility of those who having leisure, and plants that they can give away, in not making efforts to gladden the eyes of those whose outlook is often but barren yards disfigured by rubbish.

In a shady yard I have seen the roadside ferns, the osmundas, the onaclea, varieties of the aspidium and of the asplenium, the maidenhair, the common polypodium and others grow in great luxuriance, adorning what otherwise would have been a barren spot, for the place was too shady for grass. When once a fern garden is commenced, every walk in the country gives opportunity for adding to the varieties already collected, and the enlargement of the garden becomes a fascinating pursuit. In a section of my own city, traversed by many working people, an attractive garden caused them often to stay their steps to enjoy its flowers.

That garden was the direct result of the influence which a neighbor's well-cared-for grass plat exerted upon a boy. His family, caring nothing for the beautiful, bent their energies to performing only the work of life. The boy observed his neighbor's dooryard to be different from his. Its attractiveness made him willing to work to make his dull surroundings pretty. In time a lovely garden and fruit trees rewarded his labors, and better than that lifted the boy out of the common and coarse into the realm of the beautiful.

Do not, then, members of this Society, believe that you are doing

all that can be done for horticulture when you confine your efforts to your wonderfully beautiful exhibitions, but extend your work until wherever in this city the sun's rays fall upon a spot of ground uncultivated and suitable for plants, *they* shall be found growing, filling the air with fragrance in summer, and covering unsightly places with verdure for many months in the year.

In crowded neighborhoods idleness is hand in hand with brutality. Do we not believe that the youth who will care for flowers will be unconsciously refined, and will learn that in leisure moments there is something interesting to do?

One worthy example in a neighborhood will often renovate it. Matthew Arnold wrote that "no one looks on, seeing his neighbor mending without asking himself if he cannot mend in the same way."

It is often alleged that the busy man or woman has not time for gardening; or that those of limited means cannot afford the cost of seeds and plants. Let me describe a garden that has interested me to refute both of the objections given above. The owner has taken at the end of his yard a plat of ground about 10 feet by 80. Instead of dividing into beds for the sake of making an ornamental display of plants, he has held before him the ideal of raising flowers to enjoy, and to cut for his family and friends. The space allotted to the flowers is simply divided into beds by narrow paths for the sake of convenience. The seeds are planted in drills, leaving space between each drill wide enough to admit a small hoe. This enables weeding to be done by hoeing between the drills, so that seldom is my informant compelled to get down on the ground for that purpose, which, it must be confessed, is fatiguing work. His expenditure for seeds for that garden does not exceed five dollars a year. The time he has given to the garden between the middle of April and the first of September is fifty hours. In that number is not included the time devoted to the cutting of the flowers or tying up plants, for that is usually considered pleasant. It is what is counted as hard work that is included in the time given. There are few persons who can assert that they have not spent that number of hours in ways that have brought no lasting results, either of healthful pleasure or mental benefit. One small plat 4 feet by 12 was devoted to raising single poppies. Along the borders of the bed were placed stakes 16 inches in height with a nail in the top of each, by means of which a coarse wire netting was held in place over the bed, through the meshes of it the poppies came up and were held in place. As the time for them to cease blooming drew near, nasturtiums were transplanted to the borders of the bed, so that

their flowers replaced the poppies. A record of the number of poppies picked during the season was upwards of two thousand. Though this flower is evanescent, the variety and beauty of coloring make them attractive bouquets for the house. Along the boundaries of my friend's lot are rose-bushes and other shrubs, making the number of different plants in his yard almost one hundred and fifty. One hedge is very beautiful during the fall, for it is a mass of the white eupatorium and the wild purple aster. To obtain these no money was essential, but a pleasant walk in the country secured the roots.

It is a pleasure to find in this garden the favorite flowers of years gone by, such as balsam, marigold, hollyhock, larkspur, sweetwilliam, violet, pansies, petunias, portulacca, sunflower, cockscomb, zinnias, sweet peas, morning glory and asters.

When we take the estimates of the papers of the hundreds, nay thousands, in every city who spend many hours watching athletic games, we cannot accept want of time as a reason for not gardening, or walking in the country to enjoy nature's panorama.

A horticultural society can teach that one of the highest forms of physical exercise is gardening. The argument is advanced that athletic games are highly conducive to health. Grant that they are, it cannot be denied that there is often attendant upon them an ungenerous rivalry, a tendency to betting, an unhealthy excitement. The handling of the shovel, the rake, the hoe, gives exercise from which there can result no evils, but rather a positive gain to both mind and body. An athletic game has no material results to show for the benefit of others; but he "who makes two blades of grass where one grew before," can view with satisfaction the results of his exercise, and justly feel he has contributed to others' good. Moreover, gardening gives enjoyment that need not be dropped as age comes on, for as long as strength endures, it is a resource that never fails to give pleasure.

The physical benefit of gardening has been dwelt upon, but even higher than that is the mental refreshment it gives. The man harassed by business, the woman exhausted by the wearying demands made upon her, will find the thoughts turned from monotonous channels to brighter ones, and will be healed and made glad by the freshness of nature.

The experience of a business man, who for more than fifty years gave his leisure to a garden, gave it, too, in early manhood, when time meant money, for he was building up a business, proves that the writer is not theorizing, but describing an actual case. When the

perplexities and cares incidental to life vexed his soul, if not forgotten, they ceased to harass as he worked in his garden, or went forth into the woods and fields to enjoy the procession of flowers. Their haunts were shrines too sacred to be touched with other than reverent care. Rare wild flowers bloomed in his own garden, brought mostly from the different parts of the State. The anemone, dogtooth violet, Dutchman's breeches, hepatica, white and purple trilliums, columbine, the yellow variety of the lady's slipper, rare and delicate ferns, shy orchids, gladdened the eyes of all whose souls are touched by "the darlings of the woods."

To the nature of such a lover of plant life each returning spring was a new creation, awakening admiration and delight that knew no diminution after fourscore years had passed. What would not any one give to possess such a never-failing source of enjoyment? Need we idly wish for it when to a considerable degree it lies in the power of almost all to have it. It must be acknowledged that it means overcoming a certain amount of laziness perhaps, or indifference; but the best things of life do not come to us without effort. When we gain them, then the reward is so great that it dwarfs any exertion made for their attainment.

It must not be forgotten that the cultivation of flowers is an unselfish pursuit, for it tends to encourage friendly relations between neighbors; it tends also to create the desire to make others sharers in the results of the garden.

The purest pleasure arises from the love of nature. It makes existence even in hard circumstances less dreary, raising the life farther from that of the animal, and nearer to that of the man, who is kin to the angels.

A lesson that horticulturists ought to teach children and their elders is respect for plants. When spring comes, its charms tempt the young into the fields and woods, where, with reckless disregard of the future, they tear up wild plants, often exterminating species. In my own city botanists refuse to reveal the haunts of wild flowers, so much destruction has already been done by careless ramblers. Teachers, by directing the attention of children to the delight that comes to all by the beauty of woods and fields, where there is a profusion of wild flowers, might assist in awakening an interest in the preservation of them.

Doubtless it would have been more interesting, perhaps it might have been considered more worthy of this occasion, had I brought to you descriptions of celebrated gardens of old, or of the triumphs of landscape gardening to-day. It is indeed interesting to read of a magnificent

garden in Tuscany, where, surrounded by box hedges, bloomed imperishable blossoms made of—pebbles and chalk!

It is curious to recall descriptions of old English gardens, where there were monsters, giants, animals, coats-of-arms, mottoes, cut in holly, yew and box. This fashion went so far that a London gardener offered to cut "the effigy of any lady in myrtle." Even Adam and Eve were offered cut in a yew tree; Eve had the serpent with her.

The practical nature of my talk forbade any attempt to amuse. The lesson to carry away is that no garden that is an elaborate work of art or great in extent can awaken the delight and show the fondness for flowers as does one tenderly cared for in a dooryard. Where the Garden of Eden was is a disputed question, but he that loves flowers and has a garden has his own Eden.

We may be thankful that while fashion may control the arrangement of flowers, may even proclaim one to be more the style than another, it can never spoil their beauty.

To me there is greater satisfaction in dwelling upon the beauty of plant life than upon that of any other manifestation of the beautiful, for its enjoyments are not limited to any class.

Rare jewels, fine pictures, are the possession of the few; the lover of flowers can have his own garden. It may be but a few plants, yet by those his senses and soul are stimulated. It is because I believe the truth of this principle, that I have ventured to present to you, members of this Society, accomplished and skilled horticulturists as you are, my plain, practical suggestions, trusting that you will feel that there are still opportunities for greater enlargement of your work.

13th February, A. D. 1896.

ESSAY

BY

E. H. FORBUSH, Director of Gypsy Moth Work, Massachusetts Board of Agriculture.

Theme:—Injurious Insects.

When man first began to till the soil with a view to cultivating such plants as would be useful in furnishing food he instituted many changes in his relations with the material world. By removing or destroying certain plants which cumbered the ground, and planting and cultivating others, he began to disturb the balance of nature. Many animals which had before been considered beneficial or neutral to his interests became his enemies. Especially was this true of those animals which fed upon his crops, and of these the vegetable-feeding insects soon became the most important because the most difficult to deal with. To learn how to destroy or hold in check insects which are injurious to crops has always been one of the aims of the agriculturist, and this is especially true in a country like our own, which is of comparatively recent settlement.

A considerable proportion of the land in America is still uncultivated, and there are vast tracts in which insects can breed unmolested until they exhaust their feeding-grounds and overwhelm the surrounding country, as in the case of the migratory locusts. In the settlement and development of a new country, man at once begins to disturb the long-established relations between living organisms. In a wooded country the forests are cut off, the larger birds and mammals are exterminated or driven away, and great disturbances occur in the economy of nature as a consequence of these changes; new plants are introduced, and with them new insect pests are brought in from other regions or from foreign countries. As civilization advances large areas are devoted to special crops, like the great grain farms of the

northwest, the orange groves and vineyards of California, and the great orchards and potato fields of other States. The tracts offer great quantities of desirable food, and thus stimulate the reproduction of insects to a remarkable degree. The spread of imported species to the very confines of civilization is accelerated by an ever-increasing traffic on newly constructed highways and railways, and as these imported insects escape most of their natural enemies by being brought to this country, and find more favorable conditions awaiting them here, their fecundity and destructiveness are increased in undue proportion even to their increased food supply. Such are the cabbage butterfly, the wheat midge, the Hessian fly, the gypsy moth, and others. Native species which were harmless to agriculture under natural conditions in the wilderness sometimes take advantage of the introduction of a new and succulent food-plant and follow it back from the frontier into the agricultural regions, spreading over the whole country, and causing widespread injury to a staple crop, as did the Colorado potato beetle. Man also destroys his friends, the insect-eating animals. As the land becomes settled and the ravages of insects increase, the settlers, instead of endeavoring to protect and foster the useful birds that were designed to dispose of the surplus insect production, pursue them until the larger useful species are nearly if not quite extinct. The wild turkeys, grouse, prairie chickens, wild pigeons, ducks and geese, plovers, woodpeckers, blackbirds, larks, robins, and all birds which are "good for food," are slaughtered relentlessly, even at the season when the callow young must perish from starvation if deprived of parental care. The grasshopper-eating buzzards and all hawks and owls are shot at sight anywhere and everywhere by all classes of people.

While all this is going on insects increase apace. The number of species of insects upon the globe is vast. The number of individuals is beyond all comprehension. The reproductive capacity of insects is such that could a single species be allowed to increase without check its progeny would soon cover the habitable earth. The following statement by Dr. J. A. Lintner, the distinguished entomologist of the Empire State, illustrates the maximum reproductive capacity of an insect:—

"Professor Riley in his recent studies of the hop vine aphis *(Phorodon humili)* has observed thirteen generations of the species in the year. Now, if we assume the average number of young produced by each female to be one hundred, and that every individual should attain maturity and produce its full complement of young (which, however, never can occur in nature), we would have as the number of the

twelfth brood alone (not counting those of all of the preceding broods of the same year) 10,000,000,000,000,000,000,000 (ten sextillions) of individuals. Where, as in this instance, figures fail to convey any adequate conception, may I ask you to take space and the velocity of light as your measures? Were this brood as above given marshalled in line with ten individuals to a linear inch, touching one another, the procession would extend to the sun (a space which light travels in eight minutes), and beyond it to the nearest fixed star (traversed by light only in six years), and still onward in space beyond the most distant star that the strongest telescope may bring to our view, to a point so inconceivably remote that light could only reach us from it in twenty-five hundred years."

The voracity of insects is enormous, and the amount of food they can consume and digest is almost beyond belief. Kirby and Spence tell us that "Many caterpillars eat daily twice their weight of leaves, which is as if an ox weighing sixty stone were to devour every twenty-four hours three-quarters of a ton of grass." Dr. Lintner says "A certain flesh-feeding larva will consume in twenty-four hours two hundred times its original weight; a parallel to which, in the human race, would be an infant consuming, in the first day of its existence, fifteen hundred pounds of nutriment. There are vegetable-feeders, caterpillars, which, during their progress to maturity, within thirty days, increase in size ten thousand times. To equal this remarkable growth a man at his maturity would have to weigh forty tons. In view of such statements need we wonder that the insect world is so destructive and so potent a power for harm."

It may be truthfully said that this country suffers far more from the depredations of insects than any other; and this is to be expected in view of the methods employed in agriculture and the conditions under which it is here conducted.

Insects have seriously affected the agriculture of many States. The Chinch bug is said to have done an injury to the agriculture of Illinois amounting to seventy-three million dollars in a single year. The cotton worm has destroyed a considerable portion of the cotton crop nearly every season until within quite recent years, and this damage has been estimated at from twenty-five million dollars to fifty million dollars annually in the cotton States. It is said that in Massachusetts from seventy-five thousand dollars to eighty thousand dollars is expended yearly to stay the ravages of the potato beetle, and the total cost of fighting the potato beetle in the United States is estimated at two hundred million dollars annually. The damage done to agricultural products in the United States by insects has been variously estimated during different years within the last half century at from two

hundred and fifty million dollars to four hundred million dollars annually. Professor James Fletcher, entomologist to the Canadian government, places it at three hundred and eighty million dollars.

In considering the means to be used in combating injurious insects, it first becomes us to inquire what means are used by nature to regulate the increase of our insect enemies and to hold them in check. Although meteorological and climatic conditions play a considerable part in the regulation of insect increase, the principal means provided by nature for this purpose are (1) the various forms of animal life which prey upon insects; (2) certain bacterial or fungoid diseases. While little can be done by the farmer to foster and direct the increase of useful insects which prey upon other insects, while he is unable to direct or control the diseases which serve to hold injurious insects in check, he can do much toward fostering and protecting the vertebrate animals which prey upon insects, especially the birds. Birds appear to be especially designed to hold our insect foes in check. Their peculiar structure, their powers of vision and flight render them particularly adapted to this work. Their appetites and digestive powers are second only to those of insects. Audubon says a woodcock will eat its own weight of insects in a single night. Professor Treadwell shows that it was found necessary to feed a young robin forty-one per cent. more than its own weight in worms in twelve hours to insure its healthy growth and development; that it would consume nearly half its own weight of beef in a day. A man at this rate would eat about seventy pounds of flesh daily. Professor Wood estimates that a man would have to consume in each twenty-four hours, sixty-seven feet of a sausage nine inches in circumference, in order to eat as much in proportion to its bulk as the redbreast whose daily food is considered as equivalent to an earth-worm fourteen feet long.

Ornithological and entomological publications relate many instances of the usefulness of birds. Instances are given where trees and crops have been saved from destruction by the timely arrival of flocks of certain species of birds who have destroyed the insects. During the locust invasions in the west many fields of grain, vegetable gardens and other crops were saved by birds which destroyed the "hoppers" before they had attained sufficient growth to do much injury. When the Mormons first settled in Utah their crops were saved from the devastations of the mountain crickets by the timely arrival of flocks of gulls who destroyed the crickets.

Many of the worst enemies of agriculture are held in check by birds, and wherever these birds are destroyed the insects increase. Birds

undoubtedly destroy some beneficial insects, but the proportion of beneficial insects to injurious ones is exceedingly small.

In speaking of the gypsy moth *(Porthetria dispar)*, Mr. Forbush said that it was undoubtedly the most serious pest which had ever been introduced into Massachusetts from a foreign country. Its introduction into Medford, Mass., by an experimenting Frenchman is well known. Although his attempts at breeding a hardy silkworm were a failure, he has given us the gypsy moth, which is certainly one of the hardiest insects in the country. The caterpillars of this insect have been placed experimentally in a temperature of forty degrees below zero and have survived the test. They also survive the greatest summer heat.

This insect is an illustration of the increased injuriousness of introduced species. Though unlike many other introduced species it was considered a pest in its native country, it has given evidence of greatly increased destructiveness in this country.

European authors inform us that this insect has been a great scourge in many parts of Europe during the last century and a half; that the sickening and death of many trees has been attributed to it; that its ravages are still very extensive in certain parts of Europe, especially in Russia, where in recent years it has been very destructive in many provinces. In 1879–80 these caterpillars multiplied in frightful numbers and spread over an immense territory in Russia equal to nearly all our Atlantic States. They attack not only forest trees but fruit trees and nearly all kinds of vegetation. They have been particularly destructive in the forests of Russia during the past two years, having devastated large tracts. Their introduction into Massachusetts was forgotten or unnoticed for some years. After they had become acclimated they increased with great rapidity, destroying the foliage of nearly all kinds of trees, plants and shrubs, eventually killing many trees, destroying garden crops, spreading over a great portion of the town and scattering in the meanwhile into other towns in the vicinity. They not only destroyed vegetation but invaded the houses, covering them so that in some cases it is said the color of the paint on the houses could not be distinguished. In spite of all that was done by the citizens and finally by the town authorities to hold them in check, they increased so that the Legislature was called on to aid in the attempt at their extermination. The work, which was at first placed in the hands of a special commission, was afterwards delegated to the State Board of Agriculture, which has carried it on for four years. This work has been successful in so

far as it has greatly reduced the number of insects and the extent of territory infested by them. More than one third of the territory which was found infested in 1891 has been thoroughly cleared of the moth. The great difficulty which the Board of Agriculture has had to contend with in the work of exterminating the moth has been that their recommendations to the Legislature for the past three years that an appropriation be granted sufficient to do all the work that could be done economically each year, have gone unheeded. Each year the appropriation has been reduced one-third to one-fourth less than the amount recommended. The appropriations have also been so delayed that the caterpillars have been allowed to hatch and spread to some extent each spring before the work could be begun. In the progress of the work it has been conclusively proved that the moths can be exterminated from any locality, no matter what the situation or the difficulties to be overcome. More than a thousand separate and distinct colonies of the moth have been wiped out of existence.

As the female moth cannot fly, there can be no extensive spread of the moth until its numbers become so great that the caterpillars are carried out of the infested centres in all directions by vehicles and pedestrians upon which they fall.

Those who are fully acquainted with all the facts in regard to the work believe that the Gypsy moth can be exterminated if sufficient means can be provided by the Legislature for a term of years. If this is not done, there can be no hope of the extermination of the moth. If insufficient means are provided, it will be impossible either to exterminate it or prevent its spread, and it will undoubtedly be distributed not only over Massachusetts but the greater portion of the United States.

20th February, A. D. 1896.

ESSAY

BY

CHARLES GREENWOOD, Worcester, Mass.

Theme:—Family Vegetable Garden.

Mr. President, Ladies and Gentlemen.—After listening to the address of the President, to the able paper on the adornment of the home grounds, to the scholarly talk on the forces of nature as they affect the weather, to the interesting and instructive paper on the highest mission of the horticulturist, to the learned professors in their masterly presentation of facts concerning fungus and insect life that affect all vegetable life, it seems like a fearful drop from these dizzy heights to the common every day work of the farm and the consideration of "what shall we eat." But this habit of eating, though an expensive one, has in all ages been found necessary to stimulate the mind for scientific study, as well as to nourish the body for the full enjoyment of the choicest productions of the horticulturist's skill. And so, perhaps, it may be well for once during the winter to consider the family vegetable garden, from which may be had, from early spring till late autumn, so much to gratify the taste and minister to the health and happiness of all. After learning of the mavellous reproductive powers of both fungus and insect life, and the rapidity with which vegetation is destroyed by their withering touch, it would seem well-nigh impossible to secure anything desirable as a reward for our labor. But, fortunately for us, there are many natural causes that at times prevent the full development of these pests, and what is far more to our credit, we have learned by experience, observation and study to protect ourselves against their ravages, while the chemists have by study and experience placed in our hands various insecticides and fungicides for their destruction. One of the most important things we have learned is that, in vegetable as well as in animal diseases, prevention is better than cure. That, as in the animal kingdom, either in the brute creation or the human family, the surest way to guard

against epidemic disease is to carefully observe the laws of health, keeping the digestive organs in healthy action, so in the vegetable kingdom we should study carefully the natural conditions under which the different plants grow to perfection, and aim to supply those conditions as far as possible. The family garden is in many cases the most neglected part of the farm, and the excuse is often made that it don't pay; that the vegetables used in the family can be bought cheaper than they can be grown. This to a certain extent is true, but it is true only so far as we are able to grow something else that will bring more money than the vegetables cost. No one, who is dependent on the income of his farm, can afford to neglect the garden simply because he cannot realize big pay for the time expended. If the vegetables are grown they are to be had for the gathering at any time, and the satisfaction of having choice vegetables in their season of one's own production should be worth something to any man. If they are not grown the family must go without, or good money be paid for less desirable goods. Every garden should have a good bed each of asparagus and rhubarb; they are both to be had early in the season before spring-planted crops are ready. The good qualities of both are too well known to need any description. The former being an excellent substitute for peas, which are so universally popular, and can be had continuously for five or six weeks before peas are ready, and the latter follows closely on the late-keeping apples, so that we are not wholly dependent on dried fruits. These crops will both bear a great deal of kindness in the way of manuring, and should receive a heavy dressing each year. In setting the asparagus roots the land should be heavily manured and thoroughly and deeply plowed; make the rows four feet apart and the plants two feet apart in the row; cover the roots six inches deep, so that the manure and fertilizers can be harrowed or cultivated in without disturbing them. For rhubarb, make the hills four feet apart and put a wheelbarrow load of manure to a hill. Give the garden a heavy dressing of stable manure in the spring, then as the early crops are removed apply phosphate for the late ones. In arranging the garden, I would, as far as possible, have the different crops in parallel rows the entire length of the garden so that as the early crops are removed the ground can be more easily prepared for the later ones. Though I well remember that as a boy I preferred to have the rows run the short way and but few of them.

A bed of dandelions, though seldom seen in the family garden, would be found very desirable and could be had earlier than the native ones. Josh Billings once said of the dandelion blossom, that he didn't

know as it had any special mission in the world, but it came at a time of year when people were "hankerin" for something "yaller." So with the plant, it comes at a time when people are hankering for something to use vinegar on. In the family garden the question of earliness is not as important a factor as in the market garden, where a day or two makes a great difference in the price, but certain rules apply equally in both cases. All of the most hardy vegetables will not only be earlier, but will produce better crops by early planting. It is a mistake to say there is nothing gained by putting seed into the ground until it has got warm. Spinach, lettuce, onions and peas all germinate at a low temperature and all do the best while the ground is moist and comparatively cool, and should all be planted as soon as the ground is dry enough to work; none of them are injured by freezing after they break ground. In the family garden a wider range of varieties may be indulged in than in the market garden, though in many cases the best for market will also be found best for home use. In spinach, the round, thick leaf has proved the most satisfactory with me. In the last few years there has been considerable trouble with spinach running to seed early; it would be better to pay an extra price for selected seed than to take any chances with the common quality. In lettuce, the Black Seed Tennis Ball is as good as there is; to this might be added the Hanson, Boston Curled and Imperial Head; the latter is a bronze lettuce and is of very fine quality. The Boston Curled is very attractive to the eye, but for table use a little will go a good ways. Of onions, the Yellow Globe Danvers is a standard sort, but the Cracker is preferred by many for family use. The potato and the top onions are excellent varieties and mature much earlier than those from seed. For spring and early summer use, the small onions of the previous season's growth may be set out as soon as the frost is out of the ground, and in a few weeks will be fit to pull. The small onion sets put out at the same time will succeed these and keep up the supply till those from seed are ready.

Of the early peas there is but little choice, all of them being about the same thing under different names. I have found the Alaska the most satisfactory. These differ from the other early peas in that the dry peas are green instead of yellow and the pods are a brighter green, resembling more closely the later varieties. The early varieties, though not as nice as the later ones, will be found very good if used when about three-quarters grown, but if allowed to get full grown you will not be in a hurry for the second mess, unless you are very fond of peas. For a second early, McLean's Advancer take the lead; they

may be grown without bushing, the pods are of good size and the peas are remarkably sweet and tender. Where the room is limited the American Wonder will be found desirable, as it can be planted close, being very dwarf, and is of fine quality. For late peas the Champion of England, Telephone and Heroine are among the best. Beets are a very desirable crop, and have come to be about as staple as potatoes. There are a great many varieties, but none better for the first crop than the Crosby Egyptian, being very early, of good shape and dark color. The Surprise is a new beet, but which I tried last season with very satisfactory results; it is the most rapid growing beet I have ever seen, is good shape and of fine quality, but is light colored. As a rule the light colored ones are the sweetest, but there is a great deal in looks, and when we have beets we prefer to have them "red as a beet." For the fall and winter crop the Edmands and Dewings are the best. No garden would be complete without a good supply of wax beans, and here I should discard the large, flat-pod varieties that are most profitable for market, and grow the round-pod black-wax, they being of better quality. For later use plant the black-wax pole, which is by far the best of all the wax beans I have ever tasted. For shell beans, the bush Horticultural and Rhode Island half-bush for early, and the pole Horticultural, Concord and Lima for late. The Concord, though not as attractive in appearance as the Horticultural, is of better quality. Cucumbers are highly prized in the heat of midsummer, and there is no better variety for home use than the white spine, the favorite market sort. These should not be planted till toward the last of May, when the ground has become warm and danger of frost is over. They may be had by planting them in pots early in May and transplanting them to the garden the last of May or forepart of June. Water them well before transplanting and they can be taken from the pots without injury, and if transplanted in a bright, warm day, shading them for a little while in the middle of the day for a few days there is but little danger of losing them. Never transplant cucumbers on a cool, cloudy day. Pickles are highly prized in every family, and the Boston pickling cucumber is the best for this use. Of late there has been considerable trouble in growing this crop, which used to be a very sure one. I have never tried spraying the vines, nor have I known of anyone who has been successful in doing so. My experience and observation have taught me, that the troubles, whatever they may be, usually come on early in September (sometimes earlier). To insure a crop I would plant them early enough (say by the 15th or 20th of June) so as to get the crop before Sept. 1st.

This of course brings them into market at the time when people who can afford it are away on their summer vacation, and they do not meet a ready sale in the market, and when the people return in September the pickles are gone, and scores of families are deprived of what might have been had in abundance in August. There used to be no trouble with the vines bearing till frost killed them, but that is changed now, and until there is something invented to *cure* the disease the best thing to do is to *avoid* it by securing the crop in August, the time when the natural conditions are the best for the production of this excellent vegetable. Sweet corn is perhaps as universally used and highly prized as any of the long list of vegetables, and in favorable locations it will pay to plant a part of the earliest crop the last of April or first of May, delaying the main planting till May 10th. The First of All, Corey, Marblehead and Minnesota are the best early varieties. For the second early the Crosby is the best, and for the family garden I would make successive plantings of this for later use; the ears are twelve-rowed, of good size, and very sweet, while the stover is quite dwarf, making it more desirable for the limited area of the garden than the large-growing late varieties. The tomato, in spite of the newspaper paragraphs that occasionally go the rounds to the effect that they cause cancers, has steadily grown in popular favor. This scare is on par with the recent great scare in regard to tuberculosis in cattle, and while the people will continue to keep their ears close to the ground to catch the teachings of science, until science or practical experience, one or both, can show some conclusive proof of disease from these sources we will continue to use both tomatoes and milk. The Atlantic Prize and Early Ruby are the earliest, but I would not recommend them for the garden, as they are of inferior quality; they will do for early market, where earliness counts for money. The Acme or Dwarf Champion are but little later, and the quality is of the best. The First Choice, sent out by S. D. Woodruff & Sons of Orange, Conn., is very much like the Acme, but I think is an improvement on that old favorite. I have grown it exclusively for the last two or three years with very gratifying results. A few hot-bed sash will be found very useful to grow the tomato plants, as well as for lettuce, peppers, celery, &c. If you buy your tomato plants don't try to save a few cents; buy strong, stocky plants, that are well budded, or even in blossom, if you can get them. A great many fail to get enough tomatoes for home use simply by buying poor weak plants that are worth hardly as much as seed planted in the open ground. Don't waste any time or money in making trellises for tomatoes; let them spread on the ground, they

will ripen earlier and be of better quality, and above all don't be foolish and think you know more about ripening them than nature does and go to trimming the vines. Who that has ever been into the fields to pick blackberries does not know that the largest, blackest and sweetest berries are found in the shade, or that the delicious strawberry is ruined if exposed to the direct rays of the sun. What is true of the fruits is equally true of the tomato, and the sweetest and best colored ones will be found under the vines where the sun does not strike them. Never set the plants in the shade, but let the fruit have the shade which nature provides for it in the plant. By cutting off the vines and letting the sun shine directly on the green fruit it is sunburned and utterly ruined. As the season advances the vines are gradually separated and flattened down, and the fruit is exposed, but, as this is done gradually, it does not sun-burn, but is not of as good color or quality as it is early in the season. For squashes the Summer Crookneck, Marrow, Essex or Warren and Hubbard will make a succession from early summer until spring.

Celery, which but a few years ago was a luxury to be had only by the few, has come to be of almost daily use with the many in its season, and should be found in every garden. It is grown as a second crop, succeeding spinach, lettuce, or other early crops. The White Plume and Paris Golden are the favorite early sorts, and the Giant Pascal for late. If no sash are used to start the plants, buy some from the seed-bed of your neighbor who has them, prepare a bed of suitable size, and prick them out two and a half inches apart, from the 1st to the 20th of May, according to whether they are wanted for early or late use, or the ground be free of the early crops. The frame for this bed may be of boards, as it is only necessary to have something to support the shutters or mats for shading, water freely, and shade them for a few hours each day till they are well rooted. In three or four weeks they will be ready for the field, where they should be set when three or four inches high. When setting them in the field draw a line, so as to have the rows perfectly straight; walk the line, and move it over for the next row ($4\frac{1}{2}$ or 5 feet); this will mark your row; then with a light iron-bar make the holes eight or ten inches apart and five or six inches deep, fill the holes with water, and set your plants, and they will all live, even if it don't rain for two weeks. This rule will apply to setting all plants after the ground has become dry enough to make watering necessary; do this and avoid the hard work and worse than useless expense of carrying water to the field to pour on the foliage or about the plant where it will never reach the roots.

We have been told this winter the nature of the disease known as black-rot on the tomato; we were not told the cause or the preventive. Practical experience teaches that the cause is drouth, and the preventive of course would be to supply the needed water; and while this is impracticable in field culture except where an irrigating plant is established, in the family garden, where there are only two or three dozen plants, it can very readily be accomplished by making a basin of the dirt around the plant and turning in water enough to thoroughly wet the roots. One such watering might save the crop.

Of the importance of the frequent stirring of the soil perhaps it is needless to speak, though the importance of this cannot be too often brought to mind.

The time for hoeing the different crops is a matter of considerable importance, as the different crops require different treatment. It is well known that beans should not be hoed when wet, and I think this applies to potatoes, tomatoes, and other plants whose foliage is of that rough soft nature, as the dirt clings to them worse, and is more likely to blast them; but cabbage, beets, lettuce, and others whose foliage is of a firm smooth texture, may be hoed when wet, and cabbages should be hoed at no other time.

27th February, A. D. 1896.

ESSAY

BY

EDWARD O. ORPET, South Lancaster, Mass.

Theme:—The Chrysanthemum.

With the march of a higher civilization there follows immediately in its train an irresistible love for the beautiful, a thirst after things that humanize human nature, and, whether it be sought in Music, Pictures, or Flowers, the desire is always the same for a something that will lift one up out of the every-day grind of business cares and give them something, it may be more or less intangible, but there is a satisfying reaction about pure enjoyment of this nature that adds years to men's lives, brings them into closer intimacy with nature and her wondrous plan, and never fails to make better citizens of the great Commonwealth.

As Horticulturists, we are told at times, as in the reconstruction of a tariff bill, that our products are to be classed under the head of luxuries, and as such should be taxed. I tell you that the sooner this idea is exploded that flowers are only for the few, and to be made hard to obtain, just so soon will one of the most potent factors of civilization be set free, and we shall not hear it said when a prominent man dies who has gotten together a fine collection of rare plants from all parts of the world that he lived a generation ahead of his time.

I travelled last summer through the most civilized part of the most civilized nation to-day, and what do you suppose struck me above all others at first sight? It was the cottage gardens of the masses all a blaze of color with the wealth of flowers, and nearly every tiny garden had its tinier greenhouse in one corner, where the good man who had returned from his daily toil could go and smoke his pipe, tend his potted plants, sow seeds, and study and enjoy nature in its highest development every day in the year. There is no hobby that one can

so well recommend to rich and poor alike as ours; it is as pure as the daylight, and as free to all as the sunshine itself.

The very subject of "Flowers" suggests to each of us at once those with which we are most familiar, or it may be such as we are most fond of. The Rose, Carnation, Violet and Chrysanthemum at once suggest themselves, but it is of the latter that I am to talk to you to-day. I may not be able to tell you anything new on the subject, but there are some things that are so true that they will bear repetition, and I come here to-day in the hope that there are some few facts connected with the ancient and modern history of the Chrysanthemum that will bear telling over again.

In the nomenclature of this class of plants we are familiar with the two great divisions that are popularly made for the sake of easy distinction as to form, namely, the Japanese and Chinese, the one regular and globular in outline, and the other fantastic often, but always informal. It is, I find, sometimes thought that there were two parents, one Chinese and one Japanese, from which each class was derived, but no doubt most of you are aware that there was but one common origin in C. Sinense most probably, this species being common in both countries, but has been most highly developed by the Japanese with their patience and persistence. It is a most difficult matter for the most expert critics to-day to decide to which of the two countries belongs the majority of the trees, shrubs and garden plants that we have received from the east, but it is pretty certain that much of that we credited to Japan has had its origin in China, but been adopted or introduced into the islands of Japan, where they have now all the appearance of being indigenous. It does not matter to us what the parent was, but it is of interest to know that all our garden Chrysanthemums owe their origin to the one species, C. Sinense, and that the many forms and varied types that we recognize to-day are but variations that have occurred under the skill of the cultivator. It is not more than four years ago that that great pioneer of Chrysanthemum culture in America (Jno. Thorpe) told us in Boston that he thought it would not be long before we should be able to raise varieties here as good as any that were imported from Japan; at that time he said it was not to be denied that the best were of Oriental origin. This is but a very short time since, but the prediction has proved true. for to-day there are no better varieties in commerce than Ivory, Major Bonnafon, Eugene Dailledouze, Mrs. Jerome Jones, Niveus, Philadelphia, and a host of others that might be named, all of American origin, and of course well adapted to our climate and method of culture. The

French raisers have long had a monopoly in this business of raising seedlings, and as long as they send us such as Vivi and Morel we shall be grateful to them; but to one of this stamp there are hundreds of little or no value for our climate, and it is well that we have come to rely upon American industry and brains to supply our wants, and incidentally those of Europe too. Last summer I took an extended tour through some of the best English gardens, and enjoyed comparing notes with the growers there as to the relative merits of our varieties in the two countries. There is a wide-spread feeling over there that most of our novelties are no good, and should never have been sent out. If we could export a little of our climate with the plants, there would be less of this sort of grumbling, and more of our sorts grown there. That it is the climate that is at fault I am fully convinced, for do not we have the same experience with kinds that are of European origin? Our summer sun is too hot, the wood is ripened too soon, or even if the flowers are fairly good they do not have the texture that is necessary in a good flower of the present day to enable it to stand up after it is cut with long stems. Taking these facts into consideration, it is well, I say, that we have good men to the front who have made it a business to supply us with free-born American Chrysanthemums, and those of the best quality, excelling those raised in all other climes, and if we stop to think how quickly this has been accomplished it will easily be seen that it is one of the marvels of latter-day Horticulture.

While on the subject of raising seedlings let me urge those of you who have the conveniences at hand to try a few seedlings each year if only for amusement. If necessary to start with, buy a few seeds this year and sow them in a warm greenhouse in April, and grow them on without check as you would rooted cuttings; it is most interesting to watch them show buds and to see the flowers as they develop their colors and gradually unfold their flowers. You may not get any that are worthy of honors at the hands of the National Society, but you will surely get pretty flowers, and they will be your own children. The better way then to continue the work is to take two of the best flowers of the kinds you wish to work upon, beginning when they are fully expanded in the fall, that is, when the eye in the centre is fully visible and the pollen ripe, shear off the petals of the seed-bearing flower, and apply the pollen from the other, and then carefully isolate the plant in a sunny corner of the greenhouse until the seeds are ripe; it will not take long, soon after New Year you will be able to harvest the seed until sowing-time, and you will then, if the parents

are carefully recorded, have pedigree Chrysanthemums, some of which will prove of merit. We are often led to think and say that the market is over-stocked now with kinds, and that there is no more room for others, and this is true in a measure of the white and yellow kinds, but there is still room for good pink and red Chrysanthemums. Florists to-day are still looking out for the pink that is good, bright, clear from shading, of good texture and foliage, and one that will pack and travel well. So you see there is still room at the top. Some of you may object that it is not a suitable occupation for the amateur; that professional growers are the only ones who have reaped either wealth or reputation on these lines. This may appear at first to be so, but let me tell you that the work of hybridizing is essentially that of the enthusiast, one who has time to devote to the study of one particular plant or genus of plants, and to make it his own, if necessary, to the exclusion of all others, and success will surely attend his efforts. It has been so through all the improvements in the different branches of Horticulture from time beyond count that the best work has been achieved by operators who had little convenience but lots of enthusiasm, and I could prove it to you, did time permit, that the best results in hybridization have emanated from the ranks of the non-professionals, though they may have later drifted into it as a business as a natural consequence. You see we professional gardeners and also the commercial florists have too many irons to keep hot to be able to give the necessary amount of care and attention to any one class of plants, and I know of no more interesting and profitable field for the amateur than the culture and improvement of the Chrysanthemum. Haphazard work should always be avoided; proceed with care, making careful records as the work goes on; always look out for the weaklings among seedlings, these containing ninety per cent. of those that will prove of value, and must be carefully nursed into vigor; those that are aggressive in the seed-pans from the first will prove to be the weeds of little value. There is a good deal more in this matter of seedlings than most people are aware. We used to grow a large number of Cinerarias for winter use, and our neighbors could not always understand why ours were generally the best strain; they came to the conclusion that the dealer had more than one strain under the same name, and then we had to tell them the reason of the difference; we always threw away all those that made the most vigorous start when it came to potting time, or, if the seed came up thickly, we pulled out the strongest and threw them out of the seed-box, carefully nursing on the weaker ones; in this way we preserved the choicest

colors and best flowers. It is well to remember always that the higher breeding lessens the vitality, often times in the seed, and almost always in the resulting plant, so take care of the weakest if you desire to have the best is a good motto to carry with you all the time when gardening.

There seems to be a growing tendency to consider the Chrysanthemum only as a flower for the professional florist to produce—one that the amateur is unable to handle, and at the same time get first class results from his efforts. Now, while it is true that the florist is necessarily a good grower of this Queen of Autumn, it by no means follows that any one who has the shelter necessary in fall to protect the plants from frost and damp cannot also enjoy his share of the good things that our Queen of Autumn has to dispense. It seems to me that there is no one flower so well adapted to the needs of the people, or one that will give so much pleasure at the dullest time of year for the amount of care bestowed on it, as the Chrysanthemum. The largest blooms are not the best always, neither are the huge specimens we see at exhibitions to be regarded as the acme of perfection for general use as decorative plants; to me they are interesting only as showing how far it is possible to develop a plant by high culture, disbudding and training. For general use and the most satisfaction give me good-sized flowers, grown even sometimes as sprays by taking out the leading bud and letting the others develop at their own sweet will, and a bunch of these loosely arranged in a vase will far exceed in artistic merit a number of huge blooms, many of which are too heavy to be supported by the stems There is another reason for this loss of enthusiasm among the smaller growers, and it is a more difficult one to do battle with. There was a time not long since when we could root a cutting, plant it out in the garden, and forget all about it until time to protect from frost in fall, and we used to get lots of bloom with a minimum of labor. All this is changed now, and the cause taken as a unit is a very small one, but taken collectively in the shape of an army of Chinch bugs it proves to be too much for the most skilful cultivator, and he takes his plants indoors, and keeps them there all summer, so that he can fumigate occasionally when the bugs have the importunity to invade the sanctum sanctorum, for they will come even into the greenhouse, and the result of their work is seen in the early forenoon by the tops of some of the shoots wilting when the sun gets high, a close examination will reveal the puncture and oozing out of the sap, and if you are cautious and approach the plant quietly, the enemy may soon be seen; he does

not readily take wing, but usually takes refuge in dropping suddenly when first discovered. If the hand be held underneath it is very easy to catch the mischief-maker, and we find he is very susceptible to a gentle pressure between the finger and thumb. As before noted, when the trouble occurs indoors it is comparatively easy to do battle with the smoke-pot on some cool evening. The fumes of tobacco are very distasteful to all insects; we prefer however to avoid burning the tobacco at all times if possible, and especially in the hot months, when the growth made is so soft and very liable to injury; it is also an unpleasant task to some people to whom the weed is objectionable. The better way when applying insecticides is at all times to use them as preventives rather than curatives, and it will be found that an occasional dusting of tobacco-dust will do the work better than smoking, especially if taken in time.

To those who would grow their plants outdoors there is one infallible guide. If you can grow a Dahlia in your garden you can also be certain of success with the Chrysanthemum. The bugs prefer the Dahlia where it is available always, and some growers plant Dahlias near their plants on purpose to act as a decoy, and much trouble is saved thereby; but I have noticed that in the vicinity of towns there is not nearly so much difficulty experienced from the Chinch bug as in the open country, and I may be giving you advice that is not needed, but to be forewarned is also good at times. For the past five years my employers have been asking me at intervals why it is they can't have Dahlias, and it is perplexing to have to keep on admitting that we are beaten each time we plant the roots, for between our place and the town near by there are cottage gardens that are famous for their splendid Dahlias every summer; they grow by the dusty roadside, and after a shower they are simply gorgeous, and I have been envious of them each year; and in another garden near by there is a clump of hardy Chrysanthemums that I have noticed year after year in the same place, defying winter storms and rains right into late November, on the sheltered side of a cottage. There are therefore reasons to suppose that the Chinch bug does not like city life, and you may be free from its ravages here in Worcester. I only hope it is so.

Speaking of hardy Chrysanthemums reminds me that there is of late more attention paid to this class, and dealers are adding them to their lists and trying to create a demand for them, and a most worthy motive is at the bottom of it, for, while there are comparatively few that can or will give the time and attention to the production of high class blooms, there are thousands that would if they knew plant this

race of late fall flowers to liven up the dull days of the first approach of winter. There is nothing difficult in their culture; if given a sheltered corner in rich soil, not too shady, and an annual top-dressing each year in early spring, they will take care of themselves afterwards. Of this hardy race the flowers mostly belong to the Pompon class, and, though not large, they are extremely pretty when grown in large masses, or when cut and arranged in vases indoors.

You will expect me to tell you something about the growing of large specimen plants, and also how to grow specimen blooms; and before going further let me tell you, gardeners and florists, that I have nothing to tell you that you do not know already. Chrysanthemum culture is better understood to-day than ever before, owing to the excellent literature we have on the subject; besides the periodicals that treat on the subject, and to those of you who have not already seen it I would strongly advise a perusal of the American Chrysanthemum Annual, now in its second year. It gets together just what is of interest from all sources on this particular subject, and will be invaluable as a work of reference in years to come. There is a prevalent opinion that it is impossible to over-feed such a strong-growing plant as the one under consideration, and I have seen it so stated by men who ought to know better than to give such advice. As a matter of fact there is no plant that will get dyspepsia quicker than the Chrysanthemum. Those who grow large quantities take care to separate the kinds, giving each such soil as experience has proved desirable. Some sorts will, as you all know, take a larger pot or more room on the bench than others; they are great growers, need rich food and plenty of water; others again are apt to get a yellowish tinge in the foliage and to droop in strong sunshine, a sure sign that there is something wrong at the roots, most likely over-feeding, either in the shape of too strong stimulants or a soil that is too rich to start with. For these delicate-rooting kinds we have found that the addition of some burnt earth from the smother heap or charcoal refuse is an admirable ingredient to mix in with the compost; it is not so much as a fertilizer, though there will be a small percentage of potash contained therein, but its action will be purely mechanical, as freeing the soil of a superabundance of moisture, and in this way æreating the soil so that there will be a healthy root-action, and all other desirable results will surely follow. Another plan, that is also good, is to make a saturated solution of lime, and after the water has become clear apply it to the plants once every two or three weeks; lime is a wonderful purifier, and the same may be used over again when more water has been poured over

it; you cannot get lime-water too strong, for water will only hold a certain quantity in suspension; it is also death to worms in the soil the first application; it is good for most pot plants, but be sure you do not give it to any of the ericaceous family; all these are very susceptible to lime in any form, even in the soil; the fine hair-like roots are killed directly they come into contact. Most of you have had experiences with the Trailing Arbutus and Laurel when trying to transplant them. There is no real difficulty anywhere in this vicinity, but in some sections neither of these loveliest of native plants are found growing wild, nor is it possible to introduce them, and it is all due to the presence of lime in some form or other in the geological formation of the locality; but, apart from Azaleas, Heaths, Rhododendrons, and such like greenhouse plants, there are very few but what are much benefited by applications of lime-water at intervals of say once a month, and Chrysanthemums as much as twice or three times during the season, even if the plants are doing well, and oftener if they are doing poorly.

Few of you will have the conveniences of benches to grow the plants in indoors as the large growers do, but there is another plan that we have adopted largely of recent years to obtain good decorative plants for indoor work, not too tall, with ample foliage, and perhaps one large flower, or if desired a cluster or spray of smaller blooms. For this purpose we take the kinds that are naturally dwarf growers, such as W. H. Lincoln, Ivory, Marie Hoste, John Shrimpton, Major Bonnafon, Maud Dean, and in fact all such as are of dwarf or medium height are selected and cuttings taken about the 1st of June, that is, two or three weeks later than the crop taken off and rooted to plant in benches, and these when rooted are potted on, and when well hardened off and established in the three-inch pots are shifted on into six-inch and potted hard to induce a short-jointed, sturdy well matured growth, not pinched back, and in the flowering time, you will have exhibition blooms on six-inch pots that you need not be ashamed to show in public; or, better still, they can be taken into the dwelling-house and used for decoration and they will last about three weeks in fine condition if placed in a cool place. We grow each year about three hundred in this way, and it saves cutting other bloom, and gives us an opportunity to make a bold display in the dwelling-house for about six weeks, or as long as the season lasts. Let me urge you all to try a few plants in this way next season, if only a dozen or two for trial, you will not regret the experiment, because the flowers last so much longer on the plant than when cut, and the colors can be as easily arranged for effect as when cut from the plants.

For the production of good plants and good flowers later, it is of the utmost importance that good soil be used, not necessarily over-rich, but such as you would use to grow Roses may be regarded as an ideal soil for the purpose, we have used for years past a soil that is naturally poor, but at the same time one that makes a good vehicle to hold whatever may be placed therein, the place we get it is considered a mighty poor pasture at the present day, but it is of that nature that never gets sour or inert, it takes water readily and does not hold too much in suspension, and also in preference to adding a large quantity of farmyard manure, we rely almost entirely upon bone meal and a little wood ashes to begin with, adding at the same time about one-fifth of burnt refuse, taking care to mix at least six weeks prior to putting it in the benches or pots. Bone meal directly it is added to the soil has to go through a chemical change before it is available for the roots of any plant, this process is a fermentation, and is dangerous to young root-fibres if any come in contact with it, there is also quite an appreciable amount of heat generated in the heap, often enough to kill insects and weed seeds, and we like all this to take place before we are ready to use the soil, and the same is then in the best possible condition for the young plants to take hold and grow away without check from the beginning. After the plants have taken hold well in this soil, we have to watch and see when a little stimulus is necessary, and when this is apparent, we begin to use the drainage from the cow barn, and it is wonderful how well this suits the Chrysanthemum, it is perfectly clear, that is to say, without sediment; is very strong in nitrogen. Prof. Brooks of Amherst tells me that in this drainage we have four-fifths of the manurial salts that are derived from the cow, it is a strong statement, but I am quite sure he is correct, to think that only one-fifth of the manurial value is contained in the solids themselves, the rest being all present in the liquids, easily saved, but alas, also easily lost. It is of great strength as we get it, and needs to be diluted down to about one-twelfth of its bulk in water, it is then perfectly safe and very beneficial to all plants grown in pots, or in the garden, when the buds are formed we have to use by way of change of diet, Sulphate of Ammonia and Nitrate of Soda, these three stimulants with the lime water make a very acceptable diet for the plants, furnishing the requisite change that is so essential both for man and plants. The analysis of the ash of Chrysanthemum plants shows that there are nine distinct elements present, five of which are present in large quantity. Lime is present in 26 per cent.; Phosphoric acid, 19 per cent.; Potash, 16 per cent.;

Soda, 10 per cent.; and Magnesia, 10 per cent.; so that we are enabled to know what to apply to make up the deficiency caused by the drain on the soil by the plants in search of these five elements. We see that Potash and Phosphoric acid are not present in larger quantities than in most other plants, but that Soda, Magnesia, and Lime are greatly in excess. It will be found, however, that by following a change of diet, as before noted, that there will be a sustained vigor, a well-ripened growth, and in consequence, good flowers of bright colors. It is always wise to discontinue the application of stimulants as soon as the flower-buds begin to unfold, for unless it is discontinued there will be danger of decay in the half-opened blooms, and also a tendency to pale-colored or abnormal blooms. I have often been asked which bud is the best one to select when taking one for the purpose of having exhibition flowers. This is a large question, and can only be decided exhaustively by each cultivator for himself in his locality, for his special needs, and with the varieties under cultivation. To illustrate my meaning, it is not safe to take buds before the middle of August, but after that time, it is, we find, good practice to get the first that comes along, and at the beginning of September the plants will require daily watching to see that none escape us. These first buds will be those termed crown buds, and we find that if the largest flowers are desired, this is the one to secure to obtain that result, but the flowers produced are at times out of character altogether; take Vivi and Morel on the crown bud, and it will be a very pale washy pink, but wait and take the next bud, call it second crown or terminal, whichever you like, and the result will be a flower of smaller size and characteristic of that variety. This same peculiarity is also noticed with Ada Spaulding, one of the prettiest Chrysanthemums we have when taken on the terminal or final bud. Then there is Ivory, well known to you all, that is always best on the first bud you can secure, and in fact, if I am to be permitted to offer opinion, though it may differ considerably from that of others, it is always to take the crown bud on short, dwarf-growing varieties if exhibition flowers are wanted, and if this is not the issue, then wait and take the next that comes and be satisfied with flowers that are perhaps smaller, but normal in coloring. We have got to sacrifice something in either case, especially if we are not familiar with the peculiarities of each kind to start with, but after growing them for a season we can form a pretty accurate idea which is best treatment for each variety, always making notes on the results as they are demonstrated, especially as to the height the plants grow, so as to get them arranged accordingly

another year, this is especially desirable when bench culture of many kinds is adopted, or new ones are on trial. Last winter I made the suggestion to one of, if not the largest growers in this country that he would when sending out new kinds, state the height they grew, the bud to take, and season of bloom; in this way he would make his list a veritable guide to Chrysanthemum culture, and it would be in the hands of the cultivator at all seasons. I am glad to say that the suggestion was taken up and has been adopted I hope permanently, not only with the new kinds but with older ones that we are anxious to try also. Disseminators of new varieties have in the past thought it enough if they got together a few sets of new kinds and offered them for sale, and that we ought to do the rest in the shape of paying high prices for the whole set only to find that if there were one good one it was great results; we had to do the testing and weeding out, and also find out what were the characteristics of the plants besides the colors; this detail was the only one they condescended to supply. All this is now a thing of the past, and we wonder now that it was submitted to so long. There is now in every large centre a committee appointed by the National Society and part of the same, with full authority to pass opinion upon new ones during the flowering season, a standard of rules are drawn up and points named by which they are to be judged, and now it takes a really good flower to pass muster and come out with honors. All this is a distinct step in advance over old methods, and all in favor of the purchaser, for he knows that if a new variety is offered with a certificate attached to it it means something, it means that at least three good judges are of the opinion that this particular variety is a distinct gain to our already long list of garden varieties, and also that their reputations as experts are also at stake at the same time; so I say welcome to the good work that the National Society is doing for us without money and without price; and if the standard of excellence has been placed rather high as some seem to think, let us reply that there are no kinds in commerce so good that they cannot be equalled; we want a few more good pink sorts such as V. Morel for early and late season kinds, and a good late white equal to Niveus would find a place, so also would an early yellow to equal Bonnafon, and some more good crimsons that would not burn; John Shrimpton is the only one we have besides Cullingfordi that will stand the sun without flinching.

Now a word as to specimen plants in pots. I may say first that we do not grow them now; they are real white elephants to the gardener who has to supply large quantities of flowers and plants all

through summer and winter. There is too much space occupied just at the time we are storing our winter-blooming plants, and also in summer, now that it is necessary to grow them indoors all the season, so we have to make arrangements to supply the aching void left after the cut blooms are all gone by bringing on other plants in the space that would be otherwise occupied by specimen Chrysanthemums. But these are requisite and indeed essential to make up a good exhibition, and where one has the time at disposal as well as the space it is an interesting hobby, and is one that will give lots of pleasure to the grower. It is essential you will find in the beginning to select with care the kinds to grow for this purpose; very few of those adapted to producing large blooms are suitable for bush plants, and this is the reason we see so much duplication at exhibitions; for white, Ivory, Jos. H. White and L. Canning are good; for pink, Louis Boehmer and all its sports, V. Morel, Iora and Eda Prass; and for yellow, W. H. Lincoln has no equal, and also Golden Ball and Clinton Chalfant; while for reds, G. W. Childs is a reliable one. Cuttings to produce plants for this purpose should be inserted early in the year to get a good start and to build up as good a foundation as possible before the middle of August, for on this depends the size of the plant, and after that time it will take from the size and number of the flowers to pinch the plants later. Secure good strong cuttings, and when rooted grow them on without the least check, shifting on from one size pot to another as may be necessary until in May all are in the flowering size, and then the rapid growth must be carefully pinched in as soon as two joints of new growth are made, but be sure never to pinch at potting time, rather wait until the roots have gotten over the check; it is too much to disturb the roots and pinch off the tops at the same time. A good spraying every evening is a great help to the plants, and stimulates them after the heat of the summer days; it is also highly essential to keep from insects. As soon as the plants have become well established in the flowering pots stimulants must be applied as before noted, taking care not to use them too strong, but to err on the weak side rather than on the other; the pots too should be away from direct sunshine, either plunged in the garden or, if in the greenhouse, mossed round so as to keep the pots from direct sun, these being capital conductors of heat, and the roots will soon suffer, especially those in contact with the pots. Be sure at housing time in fall to give plenty of air at all times when the weather is favorable; it is far best to use a little artificial heat at night and leave air on than to close up the house on cool nights; mildew is sure to result; also damping of

the blooms after we have been to so much trouble to produce them. If mildew does occur use grape-dust or some other preparation with a sulphur basis, but grape-dust is very easily disseminated in the atmosphere owing to its relatively light consistency, and is sure to kill all germs of fungus present in the house.

I have tried in this paper to cover in a general way as many of the points in connection with the culture of our favorite flower as possible, minute detail is not desirable, as it is well understood by all present, but if there is anything neglected that you wish to be made clearer it is my province to do so to the best of my ability. I have only the welfare of this Queen of Autumn at heart ever since I grew the first plants in my own little garden nearly thirty years ago, and well do I remember the way the plants were lifted almost daily to see how much progress was made at the roots as well as at the tops. Even the names of some of the varieties come back to me now.

5th March, A. D. 1896.

ESSAY

BY

DR. GEORGE E. FRANCIS,

PRESIDENT WORCESTER MYCOLOGICAL CLUB.

Theme:—A Talk on Mycology.

Illustrated by Stereopticon.

THE subject announced for this occasion accurately describes the paper to which I ask your attention. In a "Talk on Mycology" it is practicable to treat of any branch of the subject which may offer interesting features, while you will not expect a vain attempt at a general survey of that enormous division of the science of botany which has to do with fungi. Such a general survey you may easily get in any good cyclopedia, and particularly in the last edition of the Encyclopedia Britannica.

I have thought that this audience might like to hear a little about the life and nature of fungi in general; and rather more about those larger representatives which we call Mushrooms and Toadstools, and about the conspicuous varieties which we may expect to find in this vicinity, and their good and bad qualities. And finally, it is my desire to show some relations which the larger fungi have to practical horticulture, but not to discuss at any length the effects of moulds and blights, concerning which you have already been told in the able paper by Prof. Stone.

Fungi are plants; they belong to that great division of the vegetable kingdom which does not bear flowers. Furthermore, fungi have no green leaves, or anything corresponding to green leaves: in fact they have no chlorophyll, which is the foundation of verdure; and no starch, which makes most other vegetable structures valuable for food.

Because they are not provided with chlorophyll, fungi cannot obtain carbon from the atmosphere like all plants which have green

leaves; the great, the only, source of carbon, which is a most important component of all plants, is in the carbonic acid gas in the air. The chlorophyll cells under the influence of sunlight, split up this carbonic acid into carbon and oxygen; the latter passes back into the atmosphere through the pores of the leaves, while the carbon is retained and distributed by the sap throughout the plant or tree. But fungi certainly contain carbon; how do they get it? They obtain their carbon from plants that possess green leaves and chlorophyll; they are either parasitic on living organisms, or they get their nourishment from decaying animal or vegetable matter. Every fungus is either a parasite or a saprophyte; the latter term signifying that which lives on decaying organic matter. Most of the minute, the microscopic, fungi are parasites; most of the larger mushrooms and toadstools are saprophytes, although certain of them are always parasitic, and others sometimes so.

I have just used the phrase "mushrooms and toadstools," and I must stop a moment to explain that the two words mean practically the same thing, when the subject of fungi is looked at in any broad way. There is a species of fungus, the Agaricus campestris, which is often grown in cellars and dark places in greenhouses, to be sold at high prices to epicures; the same sort is to be found in pastures in the autumn; now, to one who grows them, this sort only is a mushroom, all others, more or less resembling them, are toadstools. On the other hand there are some experts before me who used to gather specimens of twenty-five or thirty species, last summer, and to eat them with relish and delight; these initiated ones did not call their favorites toadstools; certainly not. The word toadstool implies a certain contempt, and practically no other definite meaning; and as I have no contempt for any of the family, I shall speak of them all as fungi or as mushrooms.

The structure of a mushroom when viewed under a microscope, is very simple; if a thin slice from the trunk of a tree is moderately magnified, there is found to be a good deal of variety in the shape, size and arrangement of the minute cells of which it is composed; but in a corresponding portion of a mushroom, we find only simple thin-walled cells, round where they are not made flat sided by the mutual pressure. I said, a corresponding part; and it must be explained that the stem of what we call a mushroom is not the stem of the plant, but of the flower; the plant is underground, and looks like a simple mass of roots. That which comes up in a night and withers in a day or two, is the spore-bearing portion, and is evanescent

in most cases; while the underground portion called the mycelium certainly is more permanent, and may endure for many years, never attracting notice save rarely, when in digging up an old lawn the multitude of white roots or fine threads may attract attention.

One further strange feature must not be passed over; that in the production of the spores of the more conspicuous fungi, which I call mushrooms, there is no evidence of sexuality. In almost all flowering plants, as we well know, the pollen must reach the pistil, in order that seeds may be produced; and the wonderful devices by which this union is secured have attracted the attention of many profound students of nature, and have stirred to awe and admiration all who have been so fortunate as to read about them in the writings of Darwin, or to hear such lectures as Gibson has given.

The reproduction of plants by parthenogenesis, without pollen, has been proven in the case of a rather common plant, very similar to our life-everlasting; and it seems to be universal among the conspicuous fungi, but in the smaller sorts, moulds and bacteria, etc., the sexual function again assumes its place.

The larger species of fungi are classified on systems largely based upon their spores, and the manner in which the spores are produced. The first great divisions are:

1. Fungi whose spores are produced in the interior.
2. Fungi whose spores are produced on upper or exterior surface of cap.
3. Fungi whose spores are produced on lower surface of cap.

In the first of these great divisions are found the puff balls; of which some have white and some have purple flesh, in the early growing state. Here are three varieties which may be met with about here, the largest is rarely found above 6 inches in diameter but a little farther south it has reached 20 inches in diameter. When cut across, at the eatable stage, that is to say, as soon as it is developed, the flesh is soft, quite homogeneous, and beautifully white and clean. Later it becomes discolored, yellowish brown, cottony and dusty. The smaller sorts go through a similar change; at first white and more or less edible, they rapidly dry, until when crushed between the fingers they emit a puff of smoke. Other puff balls have dark flesh from the start, like the sclerodermas, and are not fit for food. These varieties are common; spiny or warty without, very dark purple within.

In the next great division, the spores are produced on the upper surface, and the representative genus with us is the morchella or

morel. There are several species differing in outline, but all closely resembling the type, and easily to be recognized by the honeycombed exterior. So far as I know, all the species are excellent eating; they are not very common, and are found in early summer.

The rather common and abominable stink horn, Phallus impudicus, is a not distant relative; and in this connection comes also the very striking and bad smelling Clathrus carrcellatus, which is most unlike any other in shape; is of a brilliant red color; very attractive to the eye, but most objectionable to the sense of smell.

In the third great division are found most of the edible and conspicuous fungi; and they produce their spores on the under surface of the cap, which is an almost universal feature. In most kinds the spores are borne on thin plates called gills, which radiate from the stem; these are the great family called Agarics.

Another family, less extensive, has the spores produced in tubes in the under surface of the cap; these are Polyporeæ; and finally there is another small, but very distinct tribe, in which small spines, on the under surface of the cap, bear the spores.

These three divisions, having respectively gills, tubes, and spines, will be glanced at in turn. And first, the great and most important family of Agarics. The color of the spores is one of the grand landmarks, so to speak, among the Agarics; and great groups are found to be marked off, by having respectively spores black or very nearly so; spores pink or ochraceous; and spores white.

The typical mushroom of the markets and kitchen is not difficult to become acquainted with. In spite of great variation in its size, color, and many minor points, it always has dark spores, pink gills which turn black or brown, a little veil on the stem, which will be later referred to, and an agreeable taste and odor. It is usually found in open pastures in autumn. I have myself found a closely related species to be much more common in this vicinity.

The agaricus cretaceus is more chalky in its aspect; the pink of the gills less pronounced, and the flavor less delicate.

There are other species of agaricus to be found, all more or less edible; they are not altogether easy to distinguish from one another, as each species is liable to vary a good deal from it usual type, in such matters as size and color. But the generic, important characters are always to be found.

Another very common family with black spores is the Hypholoma group, which are very sure to be found where there is decaying wood. The commonest perhaps is that called "Brick top" from its color,

Among the very latest specimens to be found, after winter has stopped all vegetation, are sure to be some large, dry, cracked and almost purple samples of this sort. The Hypholomas can be safely eaten, but are not generally liked.

The next group, with inky black spores, is the Coprinus family, well known about Worcester, where for several years there has been an abundant autumnal crop of the Shaggy Mane mushroom, Coprinus Comatus. This appears year after year in the same localities, and cannot be mistaken for anything else. Its smaller relatives have to be hunted for, and are usually not far away from the Shaggy Mane. These are all perfectly safe to eat if fresh, and there is no hurtful variety that can be mistaken for them.

In the class having pink or ochraceous spores there are no species which need detain us now, and I pass to the Leucosporæ or white-spored division of the Agaricus, and among them we shall find only too many kinds which deserve our attention, and as time is limited I shall allude only briefly to a few of the most conspicuous and important representatives. One of our finest mushrooms, alas too rare, is the Lepiota procera or parasol mushroom. This seems to combine all qualities which can be asked for in an edible mushroom. It is very conspicuous by the elegance of its outline, its considerable size, its lovely soft, tawny color with brownish scales; its flesh is white, its taste and odor of the finest; and, finally there is no hurtful mushroom which can be mistaken for it.

The Elm-tree mushroom is by no means rare. Young specimens of this sort are excellent for the table.

The Lactarius deliciciosus is found in moist pine woods and mossy swamps, but is rare. Its general hue is orange; its particular character being that drops of orange-colored juice exude from the bruised or broken gills.

The Russula family is quite common and possesses many especially attractive representatives in this State. This species is quite peculiar in its color, which is distinctly green, and so, naturally alarming to the novice but it is certainly quite harmless, and as a food is certainly desirable, although its flavor is not quite as delicate as some sorts I have named.

Another very conspicuous Russula, Emetica, is very decidedly to be omitted from the basket when we are collecting for the table. It is very bright in color, varying from pink to scarlet. A simple test applies to all the Russulas,—break the cap and apply to the tongue; all the hurtful sorts will taste hot like pepper, not at once, perhaps, but in a few minutes.

One of my especial favorites comes among the white-spored division. It is the fairy-ring mushroom, Marasmius oreades. It is found all the summer through in open, grassy places; you may find it in all our parks, and in many lawns, as well as in pastures which are not too dry. But you will not always find it growing in an unbroken geometrical circle, although that is certainly the tendency and the rule in its growth. Starting from a simgle plant, the mycelium pushes out for food; when this food is consumed the fungus fails to grow; therefore the mushroom is only found on the outer edge of a circle, which will be broken as a rule, because there was not everywhere a full supply of decaying vegetation for food, and so the mycelium did not advance. The most marked peculiarity is the rather tough texture of the surface, like a kid glove. They are easily kept after careful drying, and when moistened become soft again.

In the same localities are sometimes found two other species of Marasmius, which are much like the fairy-ring, but not very attractive as food. A little study in the books of Palmer or Gibson will show how to distinguish them unfailingly. And here, perhaps, is as good a place as any to emphasize the fact that mushrooms must be learned, as individual species, by actual study of living specimens well vouched for, or of accurate colored plates, such as are now to be found in this Library and in the Free Public Library; or of colored models, of which a good collection is to be seen in the Library of Clark University. There are very few general rules, or specific tests, as of color, taste or shape. Each kind must be learned separately; it is not at all difficult as regards the common sorts, and in a very few weeks one can learn to distinguish surely the thirty or more really edible sorts to be found near by, and the half-dozen really poisonous kinds which must be avoided.

I pass now to glance for a moment at the important group of mushrooms, whose spores are produced in tubes on the under surface of the cap. And of these the most interesting genus is the Boletus.

In the Polyporus genus, the spore-bearing tubes are from the beginning, or soon become, much harder than the Boleti, and the whole fungus is inclined to be woody like the tree on which it generally is found. The commonest species is found on birch trees and is well known to you all. The young caps of the Polyporus sulphureus, an edible species, gathered when the tubes are beginning to form, are very good.

Another highly approved mushroom is nearly related, Fistulina hepatica. This is shaped and colored like a liver; on the top it is

roughened; it has various popular names, as Beefsteak fungus, Ox tongue, etc. This species, like most of those which grow upon trees, is attached at the side, having no central stem. This mushroom has even a closer resemblance than others to meat, both in appearance and taste.

A final small group I stated to carry its spores on spines projecting from the under surface of the cap—Hydnum repandum, or Hedgehog mushroom. This is not rare, and when slowly and thoroughly cooked is said to be excellent eating, and to taste a little like oysters.

I purposely passed over, in its proper place, a very important division of mushrooms which bear white spores on gills, that I might emphasize to the best of my ability some facts which must not be forgotten or overlooked by all who attempt to collect mushrooms for any purpose. The *Amanitas* are common in our woods, and very conspicuous by their size and color. They are for the most part quite inoffensive to smell and tase, but the majority of them are deadly poison. They are probably the only really dangerous mushrooms we are likely to meet; and I desire to present a short sketch of their development and I hope to be able to fix in your memories the essential characters.

My starting point is the underground plant, the mycelium; of course this originated from a spore, but that process has not yet been followed. Little knots on the white fibres of the mycelium grow larger and pear shaped, and at last are raised above the surface of the ground. Each of these is to become a mushroom, and when cut through, the undeveloped parts are easily to be distinguished. We notice at the bottom a bulbous swelling, the stem rising from it bearing the cap and the gills. But further we observe an enveloping membrane fixed at the base and covering the cap. As the stem lengthens this envelope or veil is torn; part clings to the bulbous base, and part to the cap. This is called the volva, and its remains are to be detected in the full grown amanita, and, taken with one or two other characters serve to identify the deadly genus. The slide shows another little veil on the stem; this has its origin in a membrane connecting the edge of the folded cap with the stem; as the cap expands the membrane is torn, and only a ring about the stem is left.

If you remember that every mushroom having white spores on gills, a little volva or veil on the stem, and the remains of a general volva at its base is an amanita, I can promise that your investigation of fungi will not lead you into serious peril.

The volva at the base is usually described and pictured as if it were

a socket or cup from which the stem can be readily removed; sometimes it is so; but often is quite adherent or becomes part of the stem.

In the spring or early summer the Amanita verna is among the first to attract attention in the woods. Later, come other species up to the season of frosts.

Not all Amanitas contain the alkaloid which is so fatal; it seems quite clear that a few species are quite harmless; but it is a safe rule, indeed the only safe rule for beginners, to shun all mushrooms which have the remains of a socket or sheath at the base, a little veil or ring on the stem, and white spores.

Now why is it that these Amanitas are so dangerous? While, as I have said, the substance of mushrooms is made up of simple minute cells crowded together, when viewed chemically it is chiefly composed of a form of cellulose, in which the proportion of nitrogen is so large as to make it resemble flesh more closely than most vegetable tissue. I imagine that it is not far out of the way to say that the *substance* of all mushrooms is good food; it is the added qualities of hardness, of acridity, or pungency, etc., which make them objectionable, just as the special flavors of certain varieties make them particularly delicious and desirable. But besides those added qualities which may be moderately obnoxious to the digestion, there is developed in a few specious a narcotic alkaloid, commonly called Amanitine, because, so far as we know, it is only found in some of the Amanitas. The fact that Amanitas are the only deadly mushrooms has been brought most prominently before the American public by Mr. Julius A. Palmer, who also edited a beautiful, accurate and most useful set of colored plates of the mushrooms of America. I find, however, that Mrs. Hussey made the same statement in her magnificent work on the English fungi, published forty-nine years ago. Speaking of the Fly Amanita she says. "The poison it contains is that principle called Amanitine, which is not dissipated by cooking, and is the poisonous principle of Agarics (gilled mushrooms); other mischiefs arise from acrimony or mere indigestibility and are quite secondary."

Allow me here to express my indebtedness to the works of Mrs. Hussey, of Mr. Palmer, and of Mr. Gibson, from whose plates very many of my slides have been copied.

In England and America but one species of fungus out of the many thousand kinds has been cultivated and that is the Agaricus campestris. There are many varieties in cultivation, but all belong to the same species, it is believed. On the continent of Europe and in Japan a few other species have long been artificially produced. Whether we

should not find still other species at least equally suited to horticulture, no one knows; it may almost be said, no one has tried to find out. The old kind is grown in almost the same manner as by past generations. It is far from my purpose, as it is from my ability, to treat at length on mushroom culture. But a few facts may interest you. The essentials are:—equable warmth, moist air, soil heavily charged with nitrogenous matter, *i. e.*, manure; and finally the mushroom plant. Experience has taught how to secure the first of these essentials, and that they are found at least expense in caves and cellars, or other dark, close places; and luckily experience has also pointed the way to obtain and preserve the stock, for there is a curious and unexpected difficulty to be overcome. The seed of every fungus is the spore; but while spores are easy to obtain in their season, no one has yet shown how to grow a mushroom from a spore; I mean a mushroom really *good* for food. The Armillaria mellea, which can be eaten, but hardly with joy, has been produced by sowing the spores on the juice of plums, and has been cultivated to full development.

But not so with the market mushroom. Plant these spores as you will, nothing results. Someone, generations ago, found that the white roots, the mycelium of this Agaricus, can be transplanted, and by drying can be safely kept for months ready to grow and produce a crop when heat, moisture and food are supplied; and all cultivated mushrooms grow from spawn, which is the dried mycelium, raised and prepared by specialists who have their trade secrets.

It is believed by some that the spores of these mushrooms gain the power of growth and development in passing through the alimentary canal of an herbivorous animal. Horses, cattle, and sheep are very fond of these fungi; and old pastures are the best hunting-grounds for many of the best sorts.

I shall not take time to speak of the destruction of growing plants and fruit by the microscopic fungi; that topic has already been elaborately discussed before you. But let me, in passing, call your attention to the undoubted fact that if certain minute fungi are woful pests to the market gardener and the florist, yet others are also the direct cause of far out-weighing benefits, in bringing into a useful and manageable state all dead vegetable matter. The manure heap is simply a laboratory in which fungi reduce hard woody tissues to a soft, friable, soluble state, which can serve as food for growing crops.

I wish to call your attention to some features of the life of one of our very common mushrooms; Armillaria mellea, in the older books

called Agaricus melleus, the honey mushroom. This is an especially variable species, that is to say, while it always presents certain important features, as that its spores are white, its gills attached to the stem, etc., yet in such respects as size and color, shape of stem and of cap, scaliness of surface, etc., it varies enormously, so that two varieties of this one species may be as unlike to the casual or even somewhat educated glance, as if they belonged to two different genera. But in all its forms it gets its living from woody tissue, and is very apt to be found where there is a decaying stump or log. For this statement you are quite prepared, but it was certainly a great surprise to me to learn how great and general a pest this harmless looking toadstool is in our forests. It makes its way into a living tree, rots the wood so as to spoil the timber and finally quite kills the tree. Meanwhile there is nothing to show the casual observer what is at the bottom of the mischief. How does this come about?

The mycelium or plant of the honey mushroom is like a network of branching root-like fibres underground. At the apex of a mycelial branch the cells possess the power of secreting a ferment, and if this apex in its growth underground meets the root of a tree this ferment softens the outer cells of the root so that the fungus can penetrate it. Once inside it finds abundant nourishment in the sap, and it grows and extends; it finds its way into the softer and more succulent parts of the tree between the bark and the hard wood, and in that region extends without restraint. It absorbs to itself, not only the food which the tree prepares for its own growth, but the very tissues of the tree itself, which usually dies within a year from the first entrance of the fungus. Meanwhile the fungus growth, however extensive, shows few of the characteristics of a mushroom; you may find either broad white ribbon-like masses under the bark, or dark brown bands of mycelium about the trunk. No mushrooms are to be seen, except perhaps a few at point of junction of roots and trunk. It is only after long and most difficult investigation that it has been shown that what had been thought to be a distinct form of vegetation is only the overfed and sterile mycelium of the Armillaria mellea, and that in this way the common honey mushroom is a serious enemy in the culture of forest trees.

We see then that fungi, the larger as well as the microscopic ones, are seriously destructive to living vegetation, but it by no means follows that therefore fungi are foes to vegetation in general. For in the first place consider what becomes of the tree which the honey mushroom has killed. It is at once, almost in its entirety, added to

the soil, in the condition which is most favorable for the support of other plants. Nothing has been lost, but the elements assume another shape. It is conceivable, but I do not know that there is any evidence, that only those trees and plants which have a vitality below the average, can be penetrated by the fungi; if this be true, then the destruction of the weaker tends to a gradual improvement of the race.

But something of an entirely novel character has quite recently been observed, and demonstrated, which throws fresh light on the relations between fungi and green-leaved plants. It is no less than a systematic partnership, for mutual profit, between these two very diverse families of organic nature. It is highly probable that the outcome of further investigation will be of very great value to practical horticulture.

I have found the best account of these facts, as far as known, in the beautiful work on the Natural History of Plants, by Kerner, Professor of Botany in the great University of Vienna. A translation in four volumes, by Prof. Oliver, is in the Library of this Society, and from it I give a condensed quotation, describing the partnership of the two orders of vegetation.

"The division of labor consists in the fungus mycelium providing the green-leaved plant with water and food-stuffs from the ground, while receiving in return from its partner such organic compounds as have been produced in the green leaves.

The union of the two partners always takes place underground, the absorbent roots of the green-leaved plant being woven over by the filaments of a mycelium. * * * Here and there the hyphæ of the mycelium insinuate themselves inside the walls of the root's epidermal cells and the latter are permeated by an extremely fine small-meshed mycelial net. Externally the mycelium forms a mantle of branching fine cells, which look like root hairs and perform their functions. The exterior cells of the real root being covered by the fungus, cannot absorb as they ought to do, and relegate the business of sucking in liquid from the ground to the mycelium.

Thus the fungus not only inflicts no injury on the green-leaved plant by entering into connection with its roots, but confers a positive benefit, and it is even questionable whether a number of green-leaved plants could flourish at all without the assistance of mycelia. Every gardener knows that attempts to rear many species of plants in ordinary garden soil are not attended with uniform success. Therefore, soil consisting of vegetable mould from the top layer of earth

in woods or from a heath, is chosen for the culture of Heaths and Rhododendrons. But it is not every kind of forest or heath mould that can be made use of. When earth of that nature has been quite dry for a long time it is no longer fit for this purpose. It is known that such plants should be transplanted from their forest home with the soil still clinging to the roots; the roots should not be exposed and should be cut as little as possible. By drying the soil the mycelium is killed; by shaking off the soil, or by trimming the roots, the mycelium is removed.

The failure of all attempts to propagate the oak, beech, heath, rhododendron, wintergreen, broom, or spurge laurel, by slips or cuttings set in pure sand, is explained in the same way. Roses, ivy and pinks, the roots of which possess no mycelial mantle, are easily grown from slips in pure sand. But though the cuttings of oak, etc., strike root, they do not progress in their development, because the superficial cells of their rootlets have not the power of absorbing food when not associated with a mycelium. It is only when the slips are put into sand having a liberal mixture of *fresh* leaf or heath mould, that any plants can be reared. Various experiments are reported which all confirm the theory that the fungus mycelium is not only useful but necessary to the growth of many flowering plants.

In return for its important services, the fungus undoubtedly receives a full equivalent, in the form of substances helpful to its growth which have been formed by the sunlight in the green leaves.

The range of species which live in a social union such as is here described is certainly very large. Besides many shrubby plants of the heath, arbutus and wintergreen families and the rhododendrons and daphnes, there are a large number of the conifers and apparently all the cupuliferæ, as well as several willows and poplars which are dependent for nutrition on the assistance of mycelia.

The green-leaved plants which are forced to be partners in this strange alliance are notably of gregarious growth, and cover whole tracts of country, forming boundless heaths, as in many parts of the British Isles, and measureless forests everywhere, as of oak, beech, fir, and poplar."

A very curious alliance exists between the Monotropa, the common Indian Pipe of moist woods, and a fungus mycelium. The Indian Pipe has no roots of its own, and absorbs all its nourishment from the cells of a mycelium. But the Indian Pipe has no chlorophyll, and so far as we yet know, gives back nothing to the fungus which helps it to live. A partnership with all the advantages on one side,

perhaps. We do not yet know all the facts; what little is known has been discovered very recently indeed.

Within a few days I came across this extract from a Bulletin of the Royal Botanic Garden (probably Kew). Referring to the established fact that ants are found essential to the healthy growth of some orchids, Mr. J. H. Hart states that they probably carry to the roots of the orchid the mycelium of a fungus which enables them to take up food otherwise unattainable.

Such facts as these of course are largely in the province of the professional botanists, indeed of specialists in that great science, and amateurs, however enthusiastic, are perhaps not likely to add much to human knowledge in this direction. And yet I am not sure of this; there may be important relations of the kind I have just described quite within reach of the observant faculties of many in this audience. But not without work, and time, and abundant patience.

I trust that this too hasty review of a most extensive subject has not been without its interest for you, and I hope that you will carry away something more than some bits of miscellaneous information. I should be very glad to feel that I had led some to see that this interest in mushrooms which has so recently grown up is something more than a passing fad. It is an introduction to a new realm in nature, under conditions which require some study and careful observation. We cannot safely gather mushrooms for our table without a knowledge of the species we bring home; not a vague general idea regarding them, but knowledge at least as discriminating as that which ought to be held by one who gathers autumn leaves, and does not care to run the risks of the poison ivy and dogwood.

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WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1895-96.

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OFFERED BY THE

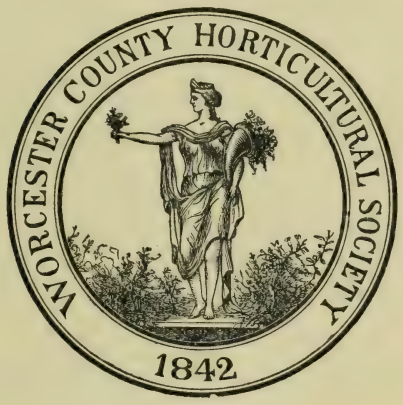
WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR

1896.

The attention of Exhibitors is particularly called to the Rules and Regulations, General and Special.



Worcester, Mass.
CHARLES HAMILTON, PRINTER,
311 MAIN STREET.
1896.

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James Draper,
Charles Greenwood,
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GENERAL RULES FOR ALL EXHIBITIONS.

A. Strict conformity to the Regulations and Rules will be expected and required, as well for the benefit of Exhibitors as for the convenience of the Officers of the Society.

B. Correct and legible names must be attached to each and every Flower or Plant entered in a class of named varieties.

C. All articles offered for premium must remain within the Hall throughout the hours of Exhibition, unless special permission for their removal shall be granted by the Committee on Exhibitions, etc.

D. All *Small Fruits* must be entered in boxes or baskets (except in the case of Strawberries or Currants, which are to be shown "*flat*") ; but they may be displayed subsequently in plates or dishes, at the taste of the exhibitor.

E. No person shall take more than one premium, under the same number.

F. The Judges may correct, before the close of any Exhibition, awards made by them, if satisfied that such were erroneous.

G. The cards of competitors shall be put, reversed, beneath the plates ; and the Judges of Award shall be excluded from the Hall of Exhibition until the Exhibition itself is ready for judgment.

H. Competitors are expected to conform strictly to the conditions under which articles are invited. Evasion or violation of them may be reported to the TRUSTEES for future disqualification of the offender.

RULES AND REGULATIONS.

1. Exhibitions will be held on Thursday, March 12, April 16, and May 14. Commencing June 4 there will be Exhibitions every Thursday, excepting July 2, until and including October 22, A. D. 1896. The hours of Exhibition will be between 3 and 4.30 o'clock. Articles offered for premiums must be in the Hall by 2.15 o'clock P. M. of the days of Exhibition. Between 2.15 and 3 o'clock the Hall will be in exclusive charge of the Secretary and the Janitor, who will allow no one else to be present. The Judges of Award may be admitted under the limitations of GENERAL RULE G.

2. Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are not members of the Society; and it is strictly required that all specimens offered for premium shall have been grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least two (2) months previous to the date of exhibition.

3. After the articles are arranged they will be under the exclusive charge of the Judges, and *not even the owners* will have liberty to *remove* them until the exhibition is closed; when they will be delivered as the contributors may direct.

4. No cards of a business nature will be allowed in any exhibition.

5. Where a certain number or quantity of Plants, Flowers, Fruits or Vegetables is designated in the schedule, there must be neither more nor less than that number or quantity of specimens shown; and in no case can any other varieties than those named in the schedule be substituted.

6. It will be the duty of the Judges to *exclude from competition all inferior specimens.* Also, all such *Designs* as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making Awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

7. The Committee on Arrangements have power to change the time of exhibition for any article, if an earlier or later season renders such change necessary; and the Secretary is requested to give notice of one week, in some daily paper, and also at the preceding exhibition, when a change in the Schedule is proposed.

8. All articles offered for premium must be correctly named. Indefinite appellations, such as "Pippin," "Sweeting," "Greening," etc., will not be considered as names. Any person exhibiting the same variety of Fruit or Vegetable, under different names, or exhibiting as grown by himself, Flowers, Fruit or Vegetables grown by another, thereby violating the objects and rules of the Society, shall be debarred from competing for the Society's premiums until reinstated.

9. No Flowers, Plants, Fruits or Vegetables will be entitled to a premium or gratuity unless they possess points of superiority; and the Judges are *strictly required* to withhold awards if, in their opinion, the articles exhibited do not merit them; nor shall any specimen for which a premium has been once awarded, receive another during the season.

10. Competitors will be required to furnish information as to their mode of cultivation, and to present specimens, for trial and examination, if requested.

11. In all exhibitions of Cut Fiowers, for competition, the use of foliage must be restricted to that of the varieties shown; and not more than five blooms, clusters, sprays or spikes, all which shall be of one color, and of one variety, shall be allowed in the same bottle, or vase, except when otherwise specified in the schedule. The Judge may correct an error in count, if he thinks it was without deliberate purpose.

12. No Judge shall award a premium or gratuity in any case wherein he is a competitor, or has an actual or resultant interest; in any such case the judgment shall be rendered by any three of the Committee on Arrangements and Exhibitions whom the Judge shall invite.

13. No Judge shall require anything of competitors respecting their exhibits, which is not distinctly specified in the schedule. No Flowers, Fruits, etc., etc., shall be put on the tables, for competition for premiums, by any person who is a judge as to the awards to be made for Fruits, Flowers, etc., etc.

14. The standard number required for an exhibit, whether of Fruits or Vegetables, will be twelve (12); unless otherwise specifically declared. The usual limit of measure, save for SMALL FRUITS, will be a half-peck.

15. All premiums that are not claimed within three months after the close of the official year shall be forfeited to the Society.

16. The awards will be made known as soon as the cards can be filled out and placed upon the tables.

17. "Downing's Fruits of America," revised edition, will guide the Judge of Fruits in his decisions upon matters at issue.

☞The Judges are authorized by the Trustees to invite the assistence of competent and discreet persons in the discharge of their duties.

FLOWERS, PLANTS, FRUITS, & VEGETABLES.

A. D. 1896.

☞ THE COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS would direct the earnest attention of the Judges to *Rule 6!*

6. *It will be the duty of the Judges to exclude from competition all inferior specimens. Also, all such designs, as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.*

SPECIAL RULES.

1. Exhibitors will add value to their exhibits by having all specimens correctly and legibly named. Notice of which will be taken by the Judge in awarding the premiums.
2. The Judge shall not award gratuities for flowers that are covered by the call of that day.
3. While it is expected that Exhibitors will take pains to correctly name their exhibits, the Judge will not exclude an exhibit for mistake in nomenclature.

Thursday, March 12.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M. to hear motions, determine appeals, and act upon business properly submitted.*

HYACINTH,—IN BLOOM.—				
No. 1. Six plants, four premiums	$3 00	2 00	1 00	50
PRIMULA SINENSIS,—IN BLOOM.—				
No. 2. Four plants, four premiums	3 00	2 00	1 00	50
PRIMULA,—ANY OTHER VARIETY, IN BLOOM.—				
No. 3. Four plants, four premiums	3 00	2 00	1 00	50
CINERARIA,—IN BLOOM.—				
No. 4. Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
CYCLAMEN,—IN BLOOM.—				
No. 5. Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
No. 6. One plant, three premiums		1 50	1 00	50

CARNATION.—

No. 7. Cut blooms, with foliage. Not to exceed 24 vases, four premiums	4 00	3 00	2 00	1 00

ARUM (RICHARDIA),—IN BLOOM.—

No. 8. Best collection; grown in an 8 in. pot; four premiums	3 00	2 00	1 00	50

AZALEA INDICA,—IN BLOOM.—

No. 9. One plant, two premiums			3 00	2 00
No. 10. Three plants, four premiums	5 00	3 00	2 00	1 00

CUT FLOWERS.—

No. 11. Not to exceed twenty blooms (clusters, sprays or spikes in vases), four premiums	3 00	2 00	1 00	50

APPLE.—

No. 12. Any variety, named, gratuity.

PEAR.—

No. 13. Any variety, named, gratuity.

VEGETABLE.—

CABBAGE,				
No. 14. Brunswick, 3 specimens, three premiums	$1 50	1 00	50	
No. 15. Red, three premiums	1 50	1 00	50	
No. 16. Savoy, three premiums	1 50	1 00	50	
CELERY,				
No. 17. Six specimens, three premiums	1 50	1 00	50	
SQUASH, ANY VARIETY,				
No. 18. Three specimens, four premiums	2 00	1 50	1 00	50
TURNIP,				
No. 19. Swede, Yellow, 6 specimens, three premiums	1 50	1 00	50	
No. 20. Swede, White, 6 specimens, three premiums	1 50	1 00	50	
No. 21. White Egg, 12 specimens, three premiums	1 50	1 00	50	
BEET,				
No. 22. Turnip, three premiums	1 50	1 00	50	
CARROT,				
No. 23. Intermediate, three premiums	1 50	1 00	50	
LETTUCE,				
No. 24. Six heads, three premiums	2 00	1 50	1 00	

Tuesday, April 16.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS—BASKET.—

No. 25.	No restrictions, four premiums....	$3 00	2 00	1 00	50

ZONALE GERANIUM,—in bloom.—

No. 26.	Four plants, distinct in color, four premiums.....	3 00	2 00	1 00	50

CUT FLOWERS,—not to exceed 20 vases.—

No. 27.	Not to exceed 5 blooms, clusters, sprays or spikes in each, four premiums	3 00	2 00	1 00	50

HYACINTH,—in bloom.—

No. 28.	Twelve plants, not less than 6 varieties, four premiums... ..	4 00	3 00	2 00	1 00

NARCISSUS,—not to exceed 24 vases.—

No. 29.	Four premiums.....	3 00	2 00	1 50	1 00

TULIP.—

No. 30.	Four pots or pans, not to exceed 12 bulbs in each, not less than three varieties, four premiums..	3 00	2 00	1 50	1 00

APPLE.—

No. 31. Any variety, named, gratuity.

PEAR.—

No. 32. Any variety, named, gratuity.

VEGETABLE.—

Horse Radish,

No. 33.	Twelve specimens, two premiums.....			$1 00	50

Parsnep,

No. 34.	Hollow Crown, three premiums.....		1 50	1 00	50
No. 35.	Student, three premiums.....		1 50	1 00	50

Radish,

No. 36.	Long, two bunches (6 in each bunch), three premiums		1 50	1 00	50
No. 37.	Globe, two bunches (6 in each bunch), two premiums.....			1 00	50

SALSIFY,

No. 38. Three premiums 1 50 1 00 50

LETTUCE,

No. 39. Six heads, four premiums 2 00 1 50 1 00 50

RHUBARB,

No. 40. Any variety, three premiums, ... 1 50 1 00 50

DANDELION (cultivated),

No. 41. One-half peck, three premiums 1 50 1 00 50

SPINACH,

No. 42. One-half peck, three premiums 1 50 1 00 50

Thursday, May 14.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

PANSY,—WITH FOLIAGE.—

No. 43. Not to exceed 35 vases, one stem in a vase, four premiums,..... $3 00 2 00 1 00 50

HYACINTH,—OPEN CULTURE.—

No. 44. Not to exceed 24 vases, one spike in each, four premiums..... 3 00 2 00 1 00 50

PELARGONIUM—(FANCY AND SHOW)—IN BLOOM.—

No. 45. Four plants, of distinct varieties, three premiums 3 00 2 00 1 00

TULIP,—OPEN CULTURE.—

No. 46. Display, not to exceed 24 vases, four premiums..... 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 47. Not to exceed 24 vases, four premiums..... 3 00 2 00 1 00 50

No. 48. BASKET,—No restrictions, four premiums..... 3 00 2 00 1 00 50

AZALEA—(MOLLIS).—

No. 49. For the best display in vases, four premiums 3 00 2 00 1 00 50

VEGETABLE.—

ASPARAGUS,

No. 50. Two bunches, three premiums.....$1 50 1 00 50

DANDELION,

No. 51. Cultivated, half-peck, three premiums.... 1 50 1 00 50

ONION,

No. 52. Two bunches, six in each bunch, three premiums..... 1 50 1 00 50

RADISH,

No. 53. Long, two bunches, six in each bunch, three premiums..... 1 50 1 00 50

No. 54. Globe, two bunches, six in each bunch, two premiums..... 1 00 50

RHUBARB,

No. 55. Linnæus, three premiums..... 1 50 1 00 50

No. 56. Victoria, three premiums..... 1 50 1 00 50

SPINACH,

No. 57. Half-peck, three premiums..... 1 50 1 00 50

Thursday, June 4.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 58. Not to exceed 30 vases, four premiums.....$3 00 2 00 1 00 50

No. 59. ONE VASE,—The specimens not to be tied or wired, three premiums..... . 2 00 1 00 50

NATIVE FLOWERS.—

No. 60. In vases, no duplicates, five premiums 3 00 2 00 1 50 1 00 50

PANSY,—IN POTS.—

No. 61. Six plants in bloom, distinct in color, four premiums 3 00 2 00 1 00 50

BEGONIA,—IN BLOOM.—

No. 62. One plant, three premiums	2 00	1 00	50	

IRIS.—

No. 63. Not to exceed 10 vases, four premiums	2 00	1 50	1 00	50

RHODODENDRON.—

No. 64. Display, in vases, four premiums	3 00	2 00	1 00	50

AZALEA,—GHENT.—

No. 65. Display, in vases, four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 66. From hardy plants and shrubs, display not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

VEGETABLE.—

ASPARAGUS,

No. 67. Two bunches, three premiums	$1 50	1 00	50	

BEET,

No. 68. Early, 12 specimens, three premiums	2 00	1 50	1 00	

CUCUMBER,

No. 69. Three specimens, three premiums	1 50	1 00	50	

SPINACH,

No. 70. Half-peck, three premiums	1 50	1 00	50	

Thursday, June 11.

CUT FLOWERS.—

No. 71. One vase, the specimens not to be tied or wired, four premiums	$2 00	1 50	1 00	50

BASKET,—NO RESTRICTIONS.—

No. 72. AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 73. FLORIST,—four premiums	3 00	2 00	1 00	50

HAND BOUQUET,—

No. 74. Not to exceed nine inches in diameter, four premiums	3 00	2 00	1 00	50
No. 75. Fuchsia, distinct varieties, four plants in bloom, four premiums	3 00	2 00	1 00	50

HYDRANGEA,—ONE PLANT IN BLOOM.—

No. 76. Hortensis, three premiums..... 2 00 1 00 50
No. 77. Otaksa, three premiums.... ..... 2 00 1 00 50
No. 78. Thomas Hogg, three premiums 2 00 1 00 50

STRAWBERRY.—

No. 79. Beder Wood, 24 berries, flat, three premiums..... ..... 1 50 1 00 50
No. 80. Crescent, three premiums..... 1 50 1 00 50
No. 81. Any variety, not scheduled, gratuity.

VEGETABLE.—

BEET,

No. 82. Twelve specimens, three premiums..... 1 50 1 00 50

PEA,

No. 83. One-half peck, four premiums..... 2 00 1 50 100 50

LETTUCE,

No. 84. Six heads, three premiums..... 1 50 1 00 50

Thursday, June 18.

☞This exhibition will be open to the public from 3 P. M. until 5.30 P. M.

ROSE.—

[TO BE SHOWN IN THE VASES OF THE SOCIETY.]

No. 85. Best twelve blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums.....$4 00 3 00 2 00 1 00
No. 86. For the best six blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums..... 3 00 2 00 1 00 50
No. 87. Display, not to exceed 30 vases, one bloom or cluster in each, five premiums. 4 00 3 00 2 00 1 50 1 00
No. 88. For the best basket of Roses, three premiums 2 00 1 00 50

No. 89. Vase, H. P. Roses, shades of one color, not to exceed 10 blooms, three premiums.... ..... 3 00 2 00 1 00

PÆONIA.—

No. 90. Not to exceed 20 vases, one flower in each, four premiums..... 2 00 1 50 1 00 50

STRAWBERRY.—

No. 91. Bubach, 24 berries, flat, four premiums.....$2 00 1 50 1 00 50

No. 92. Charles Downing, four premiums.. 2 00 1 50 1 00 50

No. 93. Greenville, three premiums. 1 50 1 00 50

No. 94. Haviland, three premiums 1 50 1 00 50

No. 95. Sharpless, four premiums..... 2 00 1 50 1 00 50

No. 96. Other varieties, not scheduled, gratuity.

VEGETABLE.—

PEA,

No. 97. Any variety, named, one-half peck, four premiums.....$2 00 1 50 1 00 50

ONION,

No. 98. Any variety, two bunches, six each, three premiums 1 50 1 00 50

TURNIP,

No. 99. Any variety, three premiums..... 1 50 1 00 50

Thursday, June 25.

CUT FLOWERS.—

No. 100. Display, not to exceed 24 vases (no duplicates), five premiums $3 00 2 00 1 50 1 00 50

CAMPANULA MEDIA.—(CANTERBURY BELL).

No. 101. Display, not to exceed 24 vases, three premiums 2 00 1 00 50

DIANTHUS BARBATUS.—(SWEET WILLIAM).

No. 102. Display, not to exceed 40 vases, one truss in a vase, four premiums..... 3 00 2 00 1 00 50

No. 103.	Display of H. P. Roses, not to exceed 24 vases, one bloom or cluster in each, four premiums..	3 00	2 00	1 50	50

STRAWBERRY.—

No. 104.	Leader, 24 berries, flat, three premiums.	1 50	1 00	50	
No. 105.	M. A. C., No. 24, three premiums.....	1 50	1 00	50	
No. 106.	Marshall, three premiums.....	1 50	1 00	50	
No. 107.	Miner, three premiums.....	1 50	1 00	50	
No. 108.	Parker Earle, three premiums	1 50	1 00	50	
No. 109.	Other varieties, not scheduled, gratuity.				
No. 110.	Best collection of recent introduction, not scheduled, not less than five varieties, four premiums.....	5 00	3 00	2 00	1 00

CHERRY.—

No. 111.	Coe's Transparent, one quart, three premiums	$1 50	1 00	50	
No. 112.	Gov. Wood, three premiums.....	1 50	1 00	50	
No. 113.	Other varieties, not scheduled, gratuity.				

VEGETABLE.—

BEET,

No. 114.	Turnip rooted, 12 specimens, three premiums.....	$1 50	1 00	50	

CARROT,

No. 115.	Two bunches, six in each, three premiums.....	1 50	1 00	50	

PEA,

No. 116.	McLean's Advancer, one-half peck, four premiums	2 00	1 50	1 00	50

Thursday, July 9.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ZONALE GERANIUM,—IN VASES.—

No. 117.	Display, not to exceed 24 vases, one truss in a vase, four premiums...	$3 00	2 00	1 00	50

No. 118. LILIUM CANDIDUM. Twelve spikes with pollen, four premiums... 3 00 2 00 1 50 1 00

GLOXINIA,—DISTINCT.—

No. 119. Four plants in bloom, four premiums..... 3 00 2 00 1 00 50

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 120. Not to exceed 24 vases, four premiums... ..... 3 00 2 00 1 00 50

IRIS KÆMPFERI.—

No. 121. Not to exceed 20 vases, one spike in each, four premiums..... 3 00 2 00 1 00 50

RASPBERRY.—

No. 122. Cuthbert, one quart, three premiums ... 1 50 1 00 50
No. 123. Turner, three premiums..... ..... 1 50 1 00 50
No. 124. Other varieties, not scheduled, gratuity.

BLACKCAP,

No. 125. Gregg, one quart, two premiums..... 1 00 50
No. 126. Mammoth Cluster, two premiums..... 1 00 50
No. 127. Souhegan, two premiums..... 1 00 50
No. 128. Other varieties, not scheduled, gratuity.

CHERRY.—

No. 129. Black Eagle, one quart, three premiums. 1 50 1 00 50
No. 130. Black Tartarian, three premiums..... 1 50 1 00 50
No. 131. Downer's Late Red, three premiums..... 1 50 1 00 50
No. 132. Elton, three premiums..... 1 50 1 00 50

STRAWBERRY.—

No. 133. Any variety, 24 berries, flat, gratuity.

VEGETABLE.—

PEA,

No. 134. Champion of England, three premiums. $2 00 1 50 1 00
No. 135. Hosford's Market, three premiums.... 2 00 1 50 1 00
No. 136. Stratagem, three premiums..... 2 00 1 50 1 00
No. 137. Other varieties, not scheduled, three premiums..... 2 00 1 50 1 00

CABBAGE,

No. 138. Any variety, 3 specimens, four premiums 2 00 1 50 1 00 50

POTATO,

No. 139.	Any named variety, 12 specimens, four premiums	2 00	1 50	1 00	50

BEAN,—SNAP—one-half-peck.—

No. 140.	Wax, four premiums	2 00	1 50	1 00	50
No. 141.	Green pod, four premiums	2 00	1 50	1 00	50

Thursday, July 16.

CUT FLOWERS.—

No. 142.	Display, not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 143.	Basket, no restrictions, four premiums	3 00	2 00	1 00	50

PETUNIA.—

No. 144.	Display, not to exceed 40 vases, one spray in each vase, four premiums	3 00	2 00	1 00	50

CURRANT.—

No. 145.	Fay, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 146.	Red Dutch, four premiums	2 00	1 50	1 00	50
No. 147.	Versaillaise, four premiums	2 00	1 50	1 00	50
No. 148.	White Dutch, three premiums		1 50	1 00	50
No. 149.	White Grape, three premiums		1 50	1 00	50
No. 150.	Other varieties, not scheduled, gratuity.				

RASPBERRY.—

No. 151.	Brinklé's Orange, one quart, three premiums		1 50	1 00	50
No. 152.	Hornét, three premiums		1 50	1 00	50
No. 153.	Any variety, not scheduled, gratuity.				

VEGETABLE.—

CABBAGE,

No. 154.	Brunswick, 3 specimens, three premiums	$1 50	1 00	50	
No. 155.	Henderson, three premiums	1 50	1 00	50	

SQUASH,

No. 156.	Three Summer Crookneck, three premiums	1 50	1 00	50	

TOMATO,

No. 157.	Any named variety, three premiums	2 00	1 50	1 00	

Thursday, July 23.

PHLOX DRUMMONDI.—

No. 158.	Display, not to exceed 30 vases, four premiums	$3 00	2 00	1 00	50

HOLLYHOCK.—

No. 159.	Not to exceed twenty vases, one bloom in each, four premiums	2 00	1 50	1 00	50

SWEET PEA,—WITH FOLIAGE.—

No. 160.	Display, not to exceed 40 vases, not exceeding ten flower stems in a vase, five premiums	3 00	2 00	1 50	1 00	50

BLACKBERRY.—

No. 161.	Agawam, one quart, three premiums	1 50	1 00	50
No. 162.	Early Harvest, three premiums	1 50	1 00	50

GOOSEBERRY.—

No. 163. One quart, of any named variety, gratuity.

PEAR.—

No. 164.	D'Eté, three premiums	$1 50	1 00	50

VEGETABLE.—

BEAN—(shell),

No. 165.	Dwarf Horticultural, half peck, three premiums	$1 50	1 00	50
No. 166.	Any other (named) variety, three premiums	1 50	1 00	50

CORN,

No. 167.	(Sweet), four premiums	2 00	1 50	1 00	50

POTATO,—12 specimens,

No. 168.	Hebron, three premiums	1 50	1 00	50
No. 169.	Polaris, three premiums	1 50	1 00	50
No. 170.	Rose, three premiums	1 50	1 00	50
No. 171.	Maggie Murphy, three premiums	1 50	1 00	50

Thursday, July 30.

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 172. Twenty blooms, clusters, sprays, stems, or spikes, in vases, three premiums. $3 00 2 00 1 00

CLEMATIS.—

No. 173. Display in vases, three premiums..... 3 00 2 00 1 00

NATIVE FLOWERS.—

No. 174. Display in vases, no restrictions, five premiums..... 3 00 2 00 1 50 1 00 50

BASKET,—NO RESTRICTIONS.—

No. 175. AMATEUR,—four premiums..... 3 00 2 00 1 00 50

No. 176. FLORIST,—four premiums 3 00 2 00 1 00 50

APPLE.—

No. 177. Any variety, gratuity.

PEAR.—

No. 178. Any variety, not scheduled, gratuity.

BLACKBERRY.—

No. 179. Snyder, one quart, three premiums.....$1 50 1 00 50

No. 180. Wachusett, three premiums..... 1 50 1 00 50

No. 181. Other varieties, not scheduled, gratuity.

VEGETABLE.—

CORN,

No. 182. Crosby, four premiums.....$2 00 1 50 1 00 50

CUCUMBER,

No. 183. Three specimens, three premiums..... 1 50 1 00 50

TOMATO,

No. 184. Acme, three premiums..... 1 50 1 00 50

Thursday, August 6.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at* $3\frac{1}{2}$ *o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ANTIRRHINUM,—SNAP DRAGON.—

No. 185. In vases, no duplicates, not to exceed three branches in a vase, four premiums.....$2 00 1 50 1 00 50

GERMAN STOCKS.—

No. 186.	In vases, no duplicates, not to exceed three branches in a vase, four premiums	3 00	2 00	1 00	50

CHINA PINK.—

No. 187.	Collection, not to exceed 40 vases, no duplicates, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 188.	Astrachan, four premiums	2 00	1 50	1 00	50
No. 189.	Sweet Bough, three premiums		1 50	1 00	50

PEAR.—

No. 190.	Giffard, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 191. Any variety, gratuity.

VEGETABLE.—

SQUASH,

No. 192.	Summer Crookneck, three specimens, three premiums	$1 50	1 00	50	
No. 193.	Any variety not Summer, three premiums	1 50	1 00	50	

TOMATO,

No. 194.	Livingston's Perfection, three premiums	1 50	1 00	50	

Thursday, August 13.

CUT FLOWERS.—

No. 195.	Not to exceed 30 vases, four premiums	$3 00	2 00	1 00	50

GLADIOLUS.—

No. 196.	Large vase of not to exceed 20 spikes, three premiums	2 00	1 00	50	

SALPIGLOSSIS.—

No. 197.	Not to exceed 20 vases, four premiums	2 00	1 50	1 00	50

APPLE.—

No. 198.	Oldenburg, four premiums	$2 00	1 50	1 00	50

No. 199.	Yellow Transparent, three premiums			1 50	1 00	50
No. 200.	Any variety, not scheduled, gratuity.					
PEAR.—						
No. 201.	Clapp, five premiums	3 00	2 00	1 50	1 00	50
PEACH.—						
No. 202.	Alexander, three premiums			1 50	1 00	50
No. 203.	Beatrice, three premiums			1 50	1 00	50
No. 204.	Rivers, three premiums			1 50	1 00	50
VEGETABLE.—						
Bean,—Goddard.—						
No. 205.	Half-peck, in pods, three premiums			1 50	1 00	50
No. 206.	Pole, any variety, three premiums			1 50	1 00	50
Corn,						
No. 207.	(Sweet), 12 ears, of not less than 12 rows, three premiums			1 50	1 00	50
Squash,						
No. 208.	Marrow, three specimens, three premiums			1 50	1 00	50
Tomato,						
No. 209.	Beauty, three premiums			1 50	1 00	50

Thursday, August 20.

ASTER.—						
No. 210.	Rose, 20 vases, one bloom in each, three premiums			$2 00	1 00	50
No. 211.	Comet, 20 vases, one bloom in each, three premiums			2 00	1 00	50
No. 212.	Victoria, 20 vases, one bloom in each, three premiums			2 00	1 50	50
No. 213.	Pompon, not to exceed 30 vases, one spray of not more than six blooms in each vase, four premiums	3 00	2 00	1 00		50
No. 214.	Truffaut, — Pæony - flowered, not to exceed 30 vases, one bloom in each vase, four premiums	3 00	2 00	1 00		50

No. 215.	Any other variety than the above, not to exceed 20 vases, one bloom in each, three premiums..		2 00	1 00	50
	GLADIOLUS.—				
No. 216.	Twenty vases, one spike in each, four premiums..... ...	3 00	2 00	1 00	50
	PHLOX—PERENNIAL.				
No. 217.	Twenty vases, one head in each, four premiums.....	3 00	2 00	1 00	50
	APPLE.—				
No. 218.	Somerset, four premiums.....	$2 00	1 50	1 00	50
No. 219.	Williams, four premiums.....	2 00	1 50	1 00	50
	PEAR.—				
No. 220.	Rostiezer, three premiums.....		1 50	1 00	50
No. 221.	Tyson, three premiums.....		1 50	1 00	50
	PEACH.—				
No. 222.	Amsden, three premiums		1 50	1 00	50
	VEGETABLE.—				
	BEAN—(HALF-PECK IN POD).—				
No. 223.	Horticultural (pole), three premiums....	$1 50		1 00	50
No. 224.	Pole (string), three premiums.....		1 50	1 00	50
	TURNIP,				
No. 225.	Purple top, flat, three premiums.....		1 50	1 00	50

Thursday, August 27.

	SCABIOSA.—				
No. 226.	Collection not to exceed 20 vases, not exceeding six flowers in a vase, four premiums.....	$3 00	2 00	1 00	50
	ZINNIA.—				
No. 227.	Collection not to exceed 24 vases, at least 12 varieties, one flower in a vase, four premiums.....	3 00	2 00	1 00	50
	LILIUM SPECIOSUM.—				
No. 228.	Twelve vases, four premiums....	3 00	2 00	1 00	50

SWEET PEA,—WITH FOLIAGE.—

No. 229. Display, not to exceed 40 vases, not exceeding ten flower stems in a vase, five premiums 3 00 2 00 1 50 1 00 50

BEGONIA—(TUBEROUS ROOTED).—

No. 230. Display, not to exceed 24 vases, four premiums..... ... 3 00 2 00 1 00 50

APPLE.—

No. 231. Sour Bough, three premiums. 1 50 1 00 50

No. 232. Any other varieties, not scheduled, gratuity.

APPLE—(CRAB).—

No. 233. Transcendent, 24 specimens, three premiums..... 1 50 1 00 50

PEAR.—

No. 234. Assomption, three premiums..... 1 50 1 00 50

No. 235. Petite Marguerite, three premiums..... 1 50 1 00 50

PEACH.—

No. 236. Cooledge, four premiums..... 2 00 1 50 1 00 50

No. 237. Foster, four premiums..... 2 00 1 50 1 00 50

No. 238. George IV., four premiums..... 2 00 1 50 1 00 50

No. 239. Other varieties, not scheduled, gratuity.

PLUM.—

No. 240. Bradshaw, four premiums..... 2 00 1 50 1 00 50

No. 241. McLaughlin, four premiums..... 2 00 1 50 1 00 50

No. 242. Washington, four premiums..... 2 00 1 50 1 00 50

No. 243. Japanese, four premiums..... 2 00 1 50 1 00 50

VEGETABLE.—

LIMA BEAN,

No. 244. Large, half-peck, three premiums.....$1 50 1 00 50

CAULIFLOWER,

No. 245. Three specimens, three premiums..... 2 00 1 50 1 00

TOMATO,

No. 246. Any variety, not scheduled, three premiums..... ... 1 50 1 00 50

SQUASH,—(WARREN).—

No. 247. Three specimens, three premiums..... 1 50 1 00 50

Thursday, September 3.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 248.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50

BOUQUET—(PARLOR).—

No. 249.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 250.	FLORIST,—four premiums	3 00	2 00	1 00	50

DAHLIA.—

LARGE FLOWERED,

No. 251.	Not to exceed 20 vases, one flower in each, four premiums	3 00	2 00	1 00	50

POMPON,

No. 252.	Not to exceed 20 vases, one spray in each, four premiums	3 00	2 00	1 00	50

NASTURTIUM OR TROPÆOLUM.—

No. 253.	Not to exceed 24 vases, not more than six blooms in each vase, four premiums	3 00	2 00	1 00	50

VERBENA.—

No. 254.	Not to exceed 30 vases, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 255.	Golden Sweet, three premiums	$1 50	1 00	50	
No. 256.	Worcester Spy, three premiums	1 50	1 00	50	
No. 257.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 258.	Ansault, three premiums	1 50	1 00	50	
No. 259.	Earle's Bergamot, three premiums	1 50	1 00	50	
No. 260.	St. Ghislain, three premiums	1 50	1 00	50	

PEACH.—

No. 261.	Crawford (Early), four premiums	2 00	1 50	1 00	50

PLUM.—

No. 262.	Gen. Hand, four premiums	2 00	1 50	1 00	50
No. 263.	Imperial Gage, four premiums	2 00	1 50	1 00	50
No. 264.	Victoria, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

CUCUMBER—for pickles,

No. 265. Half-peck, three premiums.....$1 50 1 00 50

CORN,

No. 266. (Sweet), 12 ears, of not less than 12 rows, three premiums..... 1 50 1 00 50

PEPPER.—

No. 267. Large Bell, 12 specimens, three premiums 1 50 1 00 50

No. 268. Squash, 12 specimens, three premiums.. 1 50 1 00 50

Thursday, September 10.

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 269. Not to exceed 20 vases, four premiums.... ....$3 00 2 00 1 00 50

GERANIUM.—

No. 270. Display, not to exceed 24 vases, one truss in a vase, four premiums 3 00 2 00 1 00 50

PANSY,—WITH FOLIAGE.—

No. 271. Collection not to exceed 40 vases, one stem in each vase, four premiums 3 00 2 00 1 00 50

DAHLIA,—SINGLE.—

No. 272. Not to exceed 20 vases, one spray in each, three premiums..... 1 50 1 00 50

GLADIOLUS.—

No. 273. Display, not to exceed 30 vases, four premiums..... 3 00 2 00 1 00 50

APPLE.—

No. 274. Foundling, three premiums..... .....$1 50 1 00 50

No. 275. Garden Royal, three premiums..... 1 50 1 00 50

No. 276. Holden, three premiums..... 1 50 1 00 50

No. 277. Wealthy, three premiums..... 1 50 1 00 50

PEAR.—

No. 278.	Bartlett, five premiums....	3 00	2 00	1 50	1 00	50
No. 279.	Lucrative, three premiums.....		1 50	1 00	50
No. 280.	Other varieties, not scheduled, gratuity.				

PLUM,—

No. 281.	Fellenberg, four premiums.....	2 00	1 50	1 00	50
No. 282.	Jefferson, four premiums.....	2 00	1 50	1 00	50
No. 283.	Lombard, four premiums.....	2 00	1 50	1 00	50
No. 284.	Monroe, four premiums.....	2 00	1 50	1 00	50
No. 285.	Quackenboss, four premiums.....	2 00	1 50	1 00	50
No. 286.	Japanese, four premiums.....	2 00	1 50	1 00	50

PEACH.—

No. 287.	Oldmixon, four premiums...	2 00	1 50	1 00	50

GRAPE.—

No. 288.	Green Mountain, three clusters, three premiums		1 50	1 00	50
No. 289.	Moore, three premiums.....		1 50	1 00	50

MELON.—

No. 290.	Green Flesh, three specimens, three premiums		1 50	1 00	50
No. 291.	Yellow Flesh, three premiums.....		1 50	1 00	50

WATER,

No. 292.	Three specimens, three premiums.....		1 50	1 00	50

VEGETABLE.—

CABBAGE,

No. 293.	Brunswick, three specimens, three premiums $1	50	1 00	50

CELERY,

No. 294.	Six specimens, any variety, named, three premiums		2 00	1 00	50

Thursday, September 17.

ASTER.—

No. 295.	Not to exceed 30 vases, four premiums.....$3	00	2 00	1 00	50

CUT FLOWERS—(BASKET).—No restrictions.

No. 296.	AMATEUR,—four premiums.....	3 00	2 00	1 00	50
No. 297.	FLORIST,—four premiums.....	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 298.	Not to exceed 24 vases, four premiums.....	3 00	2 00	1 00	50

APPLE.—

No. 299.	Gravenstein, five premiums.	$3 00	2 00	1 50	1 00	50
No. 300.	Maiden's Blush, three premiums.....		1 50	1 00	50
No. 301.	Porter, three premiums.....		1 50	1 00	50

APPLE,—CRAB.

No. 302.	Hyslop, 24, three premiums.....		1 50	1 00	50

PEAR.—

No. 303.	Hardy, three premiums		1 50	1 00	50
No. 304.	Durandeau, three premiums.....		1 50	1 00	50
No. 305.	Paradis d'Automne, three premiums.....		1 50	1 00	50
No. 306.	Other varieties, not scheduled, gratuity.				

PEACH.—

No. 307.	Crawford (late), four premiums..	2 00	1 50	1 00	50
No. 308.	New Seedling, originated in Worcester County, four premiums...	2 00	1 50	1 00	50
No. 309.	Stump the World, four premiums.	2 00	1 50	1 00	50
No. 310.	Other varieties, not scheduled, gratuity.				

PLUM.—

No. 311.	Coe's Golden Drop, four premiums.....	2 00	1 50	1 00	50
No. 312.	Moore's Arctic, four premiums ..	2 00	1 50	1 00	50
No. 313.	Pond's Seedling, four premiums .	2 00	1 50	1 00	50
No. 314.	Reine Claude de Bavay, four premiums.....	2 00	1 50	1 00	50

GRAPE.—

No. 315.	Brighton, three clusters, three premiums.		1 50	1 00	50
No. 316.	Lindley, three premiums.....		1 50	1 00	50
No. 317.	Massasoit, three premiums.....		1 50	1 00	50
No. 318.	Worden, four premiums.....	2 00	1 50	1 00	50

VEGETABLE.—

CARROT,

No. 319.	Any variety, three premiums	$1 50	1 00	50	

EGG PLANT,

No. 320.	Three specimens, three premiums	1 50	1 00	50	

CABBAGE,

No. 321.	Red, three specimens, three premiums	1 50	1 00	50	
No. 322.	Savoy, three premiums	1 50	1 00	50	

CAULIFLOWER,

No. 323.	Three specimens, four premiums	2 00	1 50	1 00	50

Thursday, September 24.

CUT FLOWERS.—

No. 324.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 325.	Floral Designs, in any form, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 326.	American Beauty, three premiums	$1 50	1 00	50	
No. 327.	Lyscom, three premiums	1 50	1 00	50	
No. 328.	McLellan, three premiums	1 50	1 00	50	
No. 329.	Mother, three premiums	1 50	1 00	50	
No. 330.	Twenty-Ounce, three premiums	1 50	1 00	50	
No. 331.	Holland Pippin, three premiums	1 50	1 00	50	

PEAR.—

No. 332.	Louise Bonne de Jersey, four premiums		2 00	1 50	1 00	50
No. 333.	Seckel, five premiums	3 00	2 00	1 50	1 00	50
No. 334.	Superfin, three premiums			1 50	1 00	50
No. 335.	Urbaniste, three premiums			1 50	1 00	50
No. 336.	Washington, three premiums			1 50	1 00	50

PEACH.—

No. 337. Any variety, gratuity.

GRAPE.—

No. 338.	Barry, three clusters, three premiums....	1 50	1 00	50	
No. 339.	Concord, four premiums.	2 00	1 50	1 00	50
No. 340.	Delaware, four premiums...	2 00	1 50	1 00	50
No. 341.	Iona, three premiums.....	1 50	1 00	50	
No. 342.	Merrimac, three premiums....	1 50	1 00	50	
No. 343.	Niagara, three premiums..... ..	1 50	1 00	50	
No. 344.	Pocklington, three premiums.....	1 50	1 00	50	
No. 345.	Salem, three premiums.....	1 50	1 00	50	
No. 346.	Wilder, three premiums.....	1 50	1 00	50	
No. 347.	Any variety, not scheduled, gratuity.				

VEGETABLE.—

No. 348.	Collection, not exceeding 25 varieties, four premiums.....	$8 00	6 00	4 00	2 00

Thursday, October 1.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 349.	Not to exceed 24 vases, four premiums.....	$3 00	2 00	1 00	50
No. 350.	Native Flowers in vases, no duplicates, four premiums.....	3 00	2 00	1 00	50

APPLE.—

No. 351.	Coggswell, three premiums.....	$1 50	1 00	50	
No. 352.	Fameuse, three premiums.....	1 50	1 00	50	
No. 353.	Hubbardston, four premiums.....	2 00	1 50	1 00	50
No. 354.	Washington Strawberry, three premiums.	1 50	1 00	50	
No. 355.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 356.	Bosc, six premiums	4 00	3 00	2 00	1 50	1 00	50
No. 357.	Sheldon, six premiums	4 00	3 00	2 00	1 50	1 00	50
No. 358.	Other varieties, not scheduled, gratuity.						

GRAPE,—OPEN CULTURE.—

No. 359. Any variety, three clusters, gratuity.

QUINCE,—Twelve specimens.

No. 360.	Champion, four premiums.....	2 00	1 50	1 00	50
No. 361.	Orange, five premiums....	3 00	2 00	1 50	1 00	50

No. 362. Other varieties, gratuity.

VEGETABLE.—

POTATO,

No. 363.	Six varieties (named), 12 specimens of each, four premiums..	$3 00	2 00	1 50	1 00

SQUASH,—Three specimens.

No. 364.	Essex-Hybrid, three premiums.....		1 50	1 00	50
No. 365.	Warren, three premiums,.....		1 50	1 00	50
No. 366.	Any variety, not scheduled, three premiums.....		1 50	1 00	50

CELERY,—Six specimens.

No. 367.	Paris Golden, three premiums.....		2 00	1 50	1 00
No. 368.	White Plume, three premiums.....		2 00	1 50	1 00

Thursday, October 8.

CUT FLOWERS.—

No. 369.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50

FERNS,—IN POTS.—

No. 370.	Collection, four premiums.....	3 00	2 00	1 00	50

APPLE.—

No. 371.	Belleflower, three premiums.....	$1 50	1 00	50	
No. 372.	Leicester Sweet, three premiums.....		1 50	1 00	50
No. 373.	Sutton Beauty, three premiums.....		1 50	1 00	50
No. 374.	Tompkins King, four premiums ..	2 00	1 50	1 00	50

No. 375. Other varieties, named, not scheduled, gratuity.

PEAR.—

No. 376.	Dix, three premiums.....		1 50	1 00	50
No. 377.	Frederick Clapp, three premiums.....		1 50	1 00	50
No. 378.	Marie Louise, three premiums.....		1 50	1 00	50
No. 379.	Onondaga, three premiums.....		1 50	1 00	50

GRAPE.—

No. 380.	Diana, three clusters, three premiums...		1 50	1 00	50

VEGETABLE.—

ONION,

No. 381. Red Globe, twelve, three premiums... .$1 50 1 00 50

No. 382. Yellow Globe Danvers, three premiums.. 1 50 1 00 50

SALSIFY,

No. 383. Three premiums..... 1 50 1 00 50

SQUASH,

No. 384. Hubbard, three specimens, four premiums.. ..... 2 00 1 50 1 00 50

ENDIVE,

No. 385. Six specimens, three premiums..... 1 50 1 00 50

Thursday, October 15.

CUT FLOWERS.—

No. 386. In any form, five premiums $3 00 2 00 1 50 1 00 50

APPLE.—

No. 387. Fallawater, three premiums.....$1 50 1 00 50

No. 388. Peck, three premiums..... 1 50 1 00 50

No. 389. Pound Sweet, three premiums.. ..... 1 50 1 00 50

No. 390. R. I. Greening, five premiums.... ..... 3 00 2 00 1 50 1 00 50

No. 391. Other varieties, not scheduled, gratuity.

PEAR.—

No. 392. Anjou, six premiums 4 00 3 00 2 00 1 50 1 00 50

No. 393. Comice, six premiums..... 4 00 3 00 2 00 1 50 1 00 50

VEGETABLE.—

SQUASH,

No. 394. Bay State, three specimens, three premiums $1 50 1 00 50

PARSLEY,

No. 395. Half-peck, three premiums..... 1 50 1 00 50

TURNIP,

No. 396. Purple Top Globe, three premiums..... 1 50 1 00 50

WHITE EGG,

No. 397. Three premiums..... 1 50 1 00 50

BRUSSELS SPROUTS,

No. 398. Half-peck, three premiums..... 1 50 1 00 50

Thursday, October 22.

POT PLANTS,—IN BLOOM.—

No. 399.	Display, five premiums..	$4 00	3 00	2 00	1 50	1 00

CUT FLOWERS,—IN ANY FORM.—

No. 400.	Four premiums.....		3 00	2 00	1 00	50

APPLE.—

No. 401.	Baldwin, six premiums.....	$4 00	3 00	2 00	1 50	1 00	50
No. 402.	Canada Red (Old Nonesuch), three premiums.....				1 50	1 00	50
No. 403.	Golden Russet, English, three premiums				1 50	1 00	50
No. 404.	Russet, sweet, three premiums.....				1 50	1 00	50
No. 405.	Golden Russet of Mass., three premiums				1 50	1 00	50
No. 406.	Lemon Greening, three premiums.....				1 50	1 00	50
No. 407.	McIntosh, four premiums.....			2 00	1 50	1 00	50
No. 408.	Northern Spy, five premiums..		3 00	2 00	1 50	1 00	50
No. 409.	Palmer, three premiums.....				1 50	1 00	50
No. 410.	Roxbury Russet, four premiums..			2 00	1 50	1 00	50
No. 411.	Collection, not to exceed ten varieties, four premiums....		4 00	3 00	2 00	1 00	

PEAR.—

No. 412.	Angoulême, three premiums.....				1 50	1 00	50
No. 413.	Clairgeau, three premiums.....				1 50	1 00	50
No. 414.	Dana's Hovey, five premiums	3 00	2 00		1 50	1 00	50
No. 415.	Josephine de Malines, three premiums..				1 50	1 00	50
No. 416.	Langelier, three premiums.....				1 50	1 00	50
No. 417.	Lawrence, six premiums.....	4 00	3 00	2 00	1 50	1 00	50
No. 418.	Winter Nelis, three premiums.....				1 50	1 00	50

VEGETABLE.—

CELERY,—Six specimens.—

No. 419.	Boston Market, four premiums...		3 00	2 00	1 00	50
No. 420.	Giant Pascal, four premiums....		3 00	2 00	1 00	50
No. 421.	Any variety, not scheduled, four premiums.....		3 00	2 00	1 00	50

TURNIP,—Twelve specimens.—

No. 422.	White Swede, three premiums.....				1 50	1 00	50
No. 423.	Yellow Swede, three premiums.....				1 50	1 00	50

PARSNEP,—

No. 424.	Three premiums.....				1 50	1 00	50

Annual Meeting, Wednesday, Nov. 4, 1896.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1895-96.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

EDWARD WINSLOW LINCOLN, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Edward L. Davis,	Worcester.
Henry Woodward,	"	Henry Reed,	"
*William T. Merrifield,	"	Henry Phelps,	"
B. W. Potter,	"	Freeman M. Marble,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	John L. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward,	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"	Mrs. T. A. Dawson,	"
Fred. H. Chamberlain,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

George E. Francis, 1896. Edward W. Lincoln, 1897. Nathaniel Paine, 1898.

ON LIBRARY AND PUBLICATION:

Edward W. Lincoln, Adin A. Hixon, George E. Francis.

ON NOMENCLATURE:

Henry L. Parker, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, F. M. Marble, Charles Greenwood, Edward W. Lincoln.

ON ARRANGEMENTS AND EXHIBITIONS:

James Draper, *Chairman.*

Flowers, Plants, &c.	*Fruits, &c.*	*Vegetables.*
Frederick A. Blake,	Henry L. Parker,	Charles Greenwood,
Edward Hall,	James Draper,	Calvin L. Hartshorn,
Albert H. Lange,	A. J. Marble,	Simon E. Fisher,
Mrs. F. H. Merrifield,	George C. Rice,	Herbert R. Kinney,

President Hadwen, and *Secretary* Lincoln.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
	James Draper.	Charles Greenwood.

* Since deceased.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY.

REPORTS OF THE OFFICERS

FOR THE YEAR ENDING NOVEMBER 1, 1897,

AND

ESSAYS FOR SEASON OF 1898.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
1898.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY,
A. D. 1897.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the

WORCESTER COUNTY HORTICULTURAL SOCIETY:

IN presenting for your consideration the Annual Report of the proceedings of this Society, I am as well aware as yourselves that I am not qualified to wear the mantle that graced the Atlantean shoulders of our late Secretary, EDWARD WINSLOW LINCOLN, who for thirty-four years prepared a report as no other man could have done.

I can only hope to tell you what the Society has been able to accomplish in the interest of Horticulture during the year that has passed, and give you in detail a report of the meetings which have been held.

The annual meeting of the Society was held Wednesday, November 4; President O. B. Hadwen presiding.

The first business was the election of the officers, a list of which will be found on the covers of the various publications of the Society. The reports of the Treasurer, Librarian and Secretary were read and referred to the Committee on Publication.

Voted, That there should be no charge of admission for members to the Chrysanthemum Show.

Henry L. Parker, for the Committee on revision of By-Laws, reported, and after considerable discussion, it was voted to print

five hundred copies of the report, to be mailed to each member as far as their address may be known, and further discussion deferred until Thursday, January 7, 1897, at 2 o'clock, to which day and hour this meeting was adjourned.

E. W. LINCOLN, *Secretary.*

Annual Meeting of the Trustees called immediately upon the adjournment of the meeting of the Society; President O. B. Hadwen in the chair.

The first business was the election of committees and judges, a list of which will be found with the officers.

It was voted to appropriate the following sums for premiums:

Flowers and Plants, ...	$700 00
Fruit, ...	600 00
Vegetables, ...	400 00

with the addition of $300 to be divided between the departments for new features.

For Library and Publications, . .	$250 00
For Winter Meetings, ...	250 00

and Henry L. Parker, James Draper and F. A. Blake were appointed a committee to arrange for the same.

Also voted, That the judges remain a reasonable length of time after making their awards.

Dissolved.

E. W. LINCOLN, *Secretary.*

A special meeting of the Trustees was held on Wednesday, December 16, 1896, to take action on the death of Mr. Lincoln.

President O. B. Hadwen presided, and on motion of Mr. Paine, Mr. A. A. Hixon was elected Secretary *pro tem.*

The action of the Trustees at this meeting has already been printed and distributed to the members, so it seems unnecessary to repeat the details at this time.

The adjournment of the Annual Meeting was held on Thursday, January 7, 1897, for the consideration of the revision of

the By-Laws; also, for the election of officers to fill vacancies occasioned by the death of Mr. Lincoln.

President O. B. Hadwen presided, and the following were elected to fill the vacancies:—

Secretary:

ADIN A. HIXON.

Member of the Finance Committee:

HENRY L. PARKER.

Member of the Library and Publication Committee:

JOSEPH JACKSON.

Mr. James Draper tendered his resignation as Judge of Fruit.

It was voted to hold a Chrysanthemum exhibition.

As the question of revising the By-Laws at this meeting could only be considered, and that action could not be taken legally, it was voted to postpone further discussion until the next annual meeting. The Secretary was instructed to insert in the call for the meeting that a change in By-Laws would be considered. No other business was presented. The meeting was dissolved.

A special meeting of the Trustees legally called was held on Thursday, January 14, 1897, for the election of a Judge of Fruit, and the transaction of any other business properly presented.

The resignation of Mr. Draper as made at a previous meeting, upon which no action had been taken, was accepted, and a vote passed thanking him for his faithful service in the office he had so satisfactorily and impartially filled.

Henry Phelps was chosen to fill the vacancy.

It was voted, That the Committee on Library and Publication procure a picture of Mr. Lincoln and have the same bound with the transactions of the Society containing the last report of our late secretary.

Also; voted, That all entry-cards be made out by the Secretary or his Assistant.

It was further voted that Mr. Frederick H. Wesson who several years ago was debarred as an exhibitor be reinstated.

No other business being presented it was voted to adjourn.

A meeting of the Trustees legally called was held Saturday, February 27, 1897, to take action on the following letter:—

Worcester, Mass., *Feb. 18, 1897.*

Mr. Adin A. Hixon,
Secretary, Worcester County Horticultural Society.

Dear Sir:—At the meeting of the joint committees of the Massachusetts State Grange and Worcester Agricultural Society, held on Saturday, February 13, it was unanimously voted that an invitation be extended the Worcester County Horticultural Society to unite with the Massachusetts State Grange and the Worcester Agricultural Society in the holding of a joint Fair at Worcester, Aug. 31, Sept. 1st, 2d, 3d, 1897.

It would seem that in view of the objects which the several associations mentioned desire to obtain, that much benefit and pleasant associations could be secured by this coöperation at this time. Trusting the invitation may receive your early and favorable consideration,

I remain, yours repectfully,

JOHN B. BOWKER,
Secretary, Worcester Agricultural Society.

Pursuant to the above invitation, it was voted, That we accept the invitation of the Massachusetts State Grange and the Worcester Agricultural Society to unite with them in holding a joint fair on August 31st, September 1st, 2d and 3d, 1897, with the distinct understanding and upon condition that the Worcester County Horticultural Society should incur no financial responsibility in so doing. That this Society contribute the sum of one hundred dollars towards their premium list in the Horticultural Department. That we tender them the use of our hall and such other property of this Society as they may desire during the days of their fair.

Acknowledgment accepting the conditions as above stated was received from Secretary Bowker, March 10, 1897.

It was further voted, That this Society postpone its exhibition

of September 2 one week, and that on September 9 an exhibition be held embracing the schedule covering both dates.

Also; voted, To instruct the Librarian to prepare a list of members and have the same printed.

No other business being presented it was voted to adjourn.

A meeting of the Trustees legally called at the request of the Finance Committee was held Thursday, September 23, 1897, to consider suggestions made to the said committee by the Board of Underwriters concerning minor improvements to the property with a view to a reduction of rates on our building. To attend to a renewal of insurance expiring October 1, 1897, and such other suggestions as our Finance Committee might make, and take action thereon.

It was voted, That the Finance Committee be authorized to make such improvements as they may consider for the best interests of the Society, and to use so much of its funds as are necessary to complete the work, and to cause expiring insurance to be renewed.

It was further stated that the lease of the west store expires January 1, 1898, while the lease of the other does not expire until January 1, 1899.

The company occupying the east store have not sufficient room for the successful prosecution of their business, and desire a lease of both stores, provided they can be practically made into one store. The changes they require necessitate an alteration of the front of the stores and the removal of part of the division wall.

Voted, That the Finance Committee be authorized to make the required changes, and to lease the stores provided the same shall not be less than the present annual rental with the addition of a reasonable percentage of the cost of making the changes. And that they have full power to act and borrow such sums as may be necessary to complete the work.

Also; voted, To instruct the Secretary to notify members of the annual meeting by postal card.

The above in brief is the action of those who have the management of the business of this corporation.

Heretofore this has been dealt with in a general way. I believe every member of the Society should know what has been done by its trustees and others authorized by them to transact their business, without being obliged to refer to the secretary's records. I have therefore incorporated the same in this report.

The Society has received from the executors of the will of our late Secretary, Edward Winslow Lincoln, his portrait, by Billings, which was bequeathed by him to us, and speaks more eloquently of his affection for this Society than any other of his many acts of devotion to its interest. I think every member feels a sense of obligation as well as gratitude to Edward Winslow Lincoln for this beautiful gift — a fit sequel to all he has done to win our love and thanks. The hours he has given to advance the interests of this Society as well as to inculcate in every heart the love of horticulture, his affection for every tree and shrub and flower, and his devotion to their intelligent cultivation and care, have won the admiration of all with whom he came in contact — either as the foremost representative of our organization, or in his broader capacity as chairman of the Parks-Commission which he served so faithfully.

Among our number whom death has claimed during the past year is Mr. Freeman M. Marble, who has long been identified with this Society, and was always active and earnest in its support. For many years a prominent contributor of some varieties of fruit, and a man of most excellent judgment. He served faithfully many years on various committees and on the Board of Trustees. He was one of the first to recognize the merits of the Bosc pear, and through his efforts it is more largely grown than any other pear, and it has proved to be one of the best for this locality.

Winter Meetings.—The essays, so far as they were written, are already in your hands, in print, and are equal to those of former years.

We were unfortunate in not securing better reports of the essays of Messrs. Ellsworth, Sawyer and Bailey, —each spoke extemporaneously, having no manuscript. They were interesting and instructive and should have been preserved entire, and I would suggest that the committee having the winter meetings in charge employ a stenographer, that all the essays may be preserved, together with such suggestions as the discussion following may bring out. Many statements relative to the success or failure of plant growth are presented in these discussions, that, if preserved, would be of practical advantage to our members.

We have been pleased with the interest taken in this year's series of meetings. The attendance has largely increased, and if it continues the coming winter will make it necessary to use the main hall, as the capacity of the Library was taxed to its utmost to accommodate those present.

Of the exhibitions held this year they have been far better than usual. At our first exhibition, the show of apples was in excess of anything heretofore shown. Over one hundred and fifty plates were on our tables, embracing nearly every variety grown in the country whose keeping qualities, unaided by the improved methods of cold storage, were sufficient to carry them through the season.

The following month many of the same varieties were on exhibition. There has never been a year when the exhibits were of better quality, and there was a noticeable absence of anything inferior in fruit, flower or vegetable.

At the date of the schedule for roses there were but four contributors, owing entirely to the lateness of the season; and by the consent of those exhibiting, gratuities were awarded, and the competition carried over to the next week, at which time one of the best exhibitions of roses was held. Strawberries were a little late this year but the showing was good.

The show of peaches was unusually fine, and the quality of

the fruit was much better than for many previous years. The showing this year would indicate that the Japanese plum was to be an important factor in that particular branch of fruit culture. There seemed to be but little if any appearance of blight or curculio.

In pears, the exhibitions of Anjou and Bosc were particularly fine, while all the varieties were fully up to the average.

Mr. H. A. Cook of Shrewsbury and Mr. F. A. Blake of Rochdale showed seedling carnations of their own raising which were very meritorious, and a Certificate of Merit was awarded to each.

Mr. O. B. Hadwen placed on exhibition 12 stalks of Monarch Rhubarb which weighed 22½ pounds.

The Protective Union showed a plate of oranges, grown in California, to which was awarded a gratuity; the 12 on exhibition weighing 15 pounds, while the box containing 64 weighed 78 pounds.

The Exhibitions of Wild Flowers were a success, and the uncultivated were a splendid addition to the display grown by florists and amateurs.

On one occasion one person contributed 164 varieties. The inducements offered by our Society for their collection is certainly an advantage; if for no other reason, it is conducive to the health as well as the pleasure of those who strive to win its prizes, and must bring in its results an increasing and abiding love for horticulture, and at no distant day I look to see among our best exhibitors of the garden varieties those who commenced by bringing those grown in our fields and woods.

For the first time in the history of this Society, premiums were offered for native mushrooms and it has proven a success. The interest taken in Mycology, as a special study, has been something beyond the expectations of the most sanguine in that department.

The study to discriminate between the edible and the poisonous mushrooms has been carried on with an enthusiasm never dreamed of by those who first suggested that this Society, for a brief term, add it to the schedule. The interest continued un-

abated until the season had entirely passed in which any recognition could be expected in the way of premiums, and for many weeks, when they were omitted from our schedule, hundreds of varieties were shown upon our tables.

That this feature of our exhibition has come to stay admits of no question, and the result seems to be that an effort will be made to procure in larger quantities the edible varieties for use in the homes of our members.

I am glad this matter has been encouraged by us, and hope the same may be continued in a larger way hereafter, that whatever of good comes through it, we may be among the pioneers in pushing its development.

It may not be known to all the members of this Society that at the time of the organization of the Massachusetts Fruit Growers' Association, the Finance Committee, through its chairman, Mr. Lincoln, tendered its promoters the use of our rooms with the understanding that the annual meeting of said Association should be held in this city. By an understanding between the executive officers of the two societies, it has been so arranged that their annual meeting should occur at the time of our reunion, and its officers, by this plan, have in some sense been, on that occasion, the guests of the Society.

We have received from the Fruit Growers' Association, through their officers, thanks for the courtesies received, and expressions of gratitude for the favors extended to them.

There are two other societies whose membership is largely drawn from this Society, and known as the Worcester County Market Gardeners' Association, and Worcester Mycological Society, who occupy our rooms for their meetings.

Both of these societies are aids rather than hindrances to the work of this Society, each covering an important line of work and science of horticulture, and each are entitled to all the aid we can give them.

There has not been the slightest objection or criticism of the action thus far taken towards them, nor is there any probability of any being made should the same practice continue in the future, but there are some who feel that the importance of the

field which they fill, being auxiliary institutions to our own Society, calls for a tender to them of our rooms, by a vote of the Society, at such time as it will not interfere with our contracts.

The receipts from the Hall during the past year were within a few dollars of the largest ever obtained; and when we consider the depression in business of last winter and the number unemployed, who in former years and under other conditions were our best patrons, we feel that we have done all that could be expected of us. With the encouraging outlook for business prosperity in the near future, we feel that a better showing will be made the coming year.

In conclusion, I desire to thank the officers of the Society for their uniform courtesy, their timely suggestions and valuable assistance in the performance of the duties required by the office, and to each and all the members for their loyalty to the Society, and the devotion they have exhibited to the science of Horticulture.

Respectfully submitted.

A. A. HIXON, *Secretary.*

HORTICULTURAL HALL,
WORCESTER, MASS.,
November 3, 1897.

REPORT OF THE LIBRARIAN.

To the Members of the
Worcester County Horticultural Society.

During the past year the Library has been open every day, proving a convenience, not only to those wishing to consult books and papers, but as a place of meeting for those interested in Horticulture and more especially to our members living out of the city.

The interest shown this season has been mostly in Mycology and Native Flowers; though the latter part of the season there has been considerable interest shown in Bees,—more particularly among those interested in artificial fertilization of plants.

The following Books, Periodicals, Papers and Bulletins have been added to the Library during the past year:—

United States Department of Agriculture: Farmers' Bulletin No. 54. Some common birds in their relation to Agriculture. 1897.

Accessions to the Department Library. Bulletins, October, 1896, to June, 1897.

Bulletin, October, 1897. A Bibliography of Poultry.

Reports of the U. S. Commissioner of Education; Vol. 1, 1894 and 1895. Vol. 1, 1895 and 1896.

Reports of the Civil Service Commission, United States: 10th, July 1, 1892, to June 30, 1893; 11th, July 1, 1893, to June 30, 1894.

Eleventh Census of the United States, 1890: Statistics of Agriculture. Agriculture by Irrigation. Statistics of Fisheries.

Report of Special Commission of the United States Senate on the Irrigation and Reclamation of Arid Land. Vols. 3 and 4 in one vol.

Field Columbian Museum Publications: Botanical Series, Publication 15, Vol. 1, No. 3. Annual report of the Director to the Board of Trustees, 1895 and 1896.

Monthly Bulletins of the Bureau of American Republics, November, 1896, December, 1896. Vol. 4, No. 5; Vol. 4, No. 6.

A Hand-Book on the Annexation of Hawaii, by Lorrin A. Thurston.

Report of Massachusetts State Board of Agriculture and Experimental Station, 1896; William R. Sessions, Secretary. 20 copies for distribution.

Massachusetts Crop Reports. Bulletins Nos. 1 to 6, inclusive.

Massachusetts Agricultural College, Amherst, Mass.

Hatch Experimental Station. Bulletins Nos. 42 to 48, inclusive.

Hatch Experimental Station, Ninth Annual Report, Jan. 1, 1897.

Meteorological Reports, Hatch Experimental Station. Bulletins Nos. 94 to 103, inclusive.

Cornell University Agricultural Experimental Station. Bulletins Nos. 122 to 128, inclusive.

Michigan Agricultural Experimental Station. Bulletins Nos. 136 to 140, inclusive.

New Jersey Agricultural Experimental Station. Bulletin No. 116.

West Virginia Agricultural Experimental Station. Bulletin No. 46.

Scientific American Supplement, Reference Catalogue. Munn & Co.

Who invented the Reaper? R. B. Swift.

Announcement of the Bussey Institute. Harvard University, 1897 and 1898.

Reports of the Trustees of Public Reservations, 4th, 1895, and 5th, 1896.

Worcester Society of Antiquity: F. P. Rice. Town Records, 1833 to 1836; 1836 to 1840; 1841 to 1844.

Old Worcester. From and by Lieut. Samuel Hathaway.

Report of the Board of Trade; Worcester, 1897. Secretary Squiers.

Report of the Worcester Parks Commission, Nov. 30, 1896. Edward Winslow Lincoln, Chairman.

Sargent's Sylva, Vol. X.

Illustrated Flora of the Northern States and Canada. Vol. 2. 1897. Britton & Brown.

A History of Gardening in England. 1896. Hon. Alicia Amherst.

The Water Garden. 1897. William Tricker.

Revue Horticole. French. 2 Vols. 1895 and 1896.

Mushrooms and their Uses. 1897. Charles H. Peck, State Botanist, New York.

British Fungi. 2 Vols. 1886. Rev. John Stevenson.

Students' Hand-Book of Mushrooms of America. Edible and Poisonous. Thomas Taylor, M.D. Pamphlet No. 1, 2, 3.

Exchanged with George E. Francis, M.D. For the Sphagnaceæ or Peat Mosses of Europe and North America. 1880. Braithwaite.

REGULAR PUBLICATIONS.

Amateur Gardening. Springfield, Mass.
American Florist.
American Gardening.
Country Gentleman.
Florist Exchange.
Farm and Garden.
Gardening.
Garden and Forest.
New England Homestead.
Massachusetts Ploughman.
Meehan's Monthly.
Rural New Yorker.
State Board of Health, Nashville, Tenn. Bulletins.
Worcester Daily Spy.
Worcester Daily Telegram.
English:
Agricultural Gazette.
Garden.
Gardener's Chronicle.
Gardening Illustrated.

Received from the "Country Gentleman" a picture of Luther H. Tucker, who died Feb. 23, 1897; editor-in-chief of that paper for 24 years. Which I have had framed and hung in the Library.

All of which is respectfully submitted.

ADIN A. HIXON, *Librarian.*

HORTICULTURAL HALL, WORCESTER, MASS.,
October 31, 1897.

REPORT OF THE TREASURER.

The Treasurer of the Worcester County Horticultural Society presents his annual report, showing the receipts and disbursements for the year ending November 1, 1897.

The income derived from the rent of the Hall is about the same as for the previous year.

Fifteen hundred dollars has been paid on the mortgage loan of the Society during the year, and but for the fact that the trustees have authorized certain repairs and alterations in the building still more would have been paid. It is confidently expected that after the repairs have been made and paid for, there will be a larger reduction in the debt for the coming years.

The F. H. Dewey Fund is now $1081.80, having been increased a little the past year by the accumulation of interest, no charge having been made against it.

Nathaniel Paine, Treasurer, in account with

Worcester County Horticultural Society.

Dr.

1896.		
Nov. 1.	Balance as per last report,	$2,330.85
1897.		
Nov. 1.	Receipts to date:	
	From rent of stores,	$6,250.00
	rent of Hall,	4,790.00
	membership fees,	137.00
	Chrysanthemum exhibition,	155.50
	For tickets to annual banquet,	148.50
	interest on bank deposit,	77.50

Nov. 1.	Prizes for chrysanthemums:		
	From O. B. Hadwen,	$25.00	
	H. F. A. Lange,	25.00	
	F. B. Madaus,	15.00	
	F. A. Blake,	15.00	
	Edward Hall,	15.00	
	C. D. Thayer,	15.00	
			110.00
	Total,		$13,999.05

Cr.

1897.			
Nov. 1.	Payments to date:		
	City taxes and water rates,	$ 816.86	
	Premiums paid,	2,069.86	
	Paid the judges,	150.00	
	for gas,	1,003.19	
	Salary of treasurer,	150 00	
	A. A. Hixon,	1,333.33	
	janitor,	500.00	
	A. A. Hixon (Hall expenses),	305.19	
	For card catalogue,	84.70	
	books and periodicals,	28.42	
	Sundry expenses (safe, &c.),	165.97	
	Repairs at Hall,	484.09	
	On account of annual banquet,	257.80	
	Paid on mortgage loan,	1,500.00	
	Interest on loan,	502.92	
	Paid for printing, publications, &c.,	409.28	
	Total,	$9,761.61	
1897, Nov. 1.	Cash balance,	4,237.44	
			$13,999.05

NATHL. PAINE, *Treas.*

November 3, 1897.

WORCESTER, Nov. 8, 1897.

We the undersigned, Auditors of the Worcester County Horticultural Society, hereby certify that we have examined the account of the Treasurer, and find the same to be correct and properly vouched, and that the cash balance is accounted for.

F. H. CHAMBERLAIN.
HENRY L. PARKER.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

A. D. 1896-97.

PART II.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 Main Street.
1897.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY.

14th January, A. D. 1897.

ADDRESS

BY

O. B. HADWEN, President.

Subject:—The Best Disposition of Fruit in Heavy-Bearing Years.

The bearing of 1896 was perhaps unprecedented for the production of apples, amounting to between 50,000,000 and 60,000,000 barrels. What to do with this tremendous product has puzzled the whole apple-producing world. The home market has proved utterly inadequate for the supply, and prices have been ruinously low. The foreign market has been glutted, and those who have sent the fruit abroad have in most cases been disappointed. Apples today are as low in London as they are in Boston. Our exporters have sustained severe losses, and on the whole those who have sent apples to England this year have lost money.

But now, what is the best way of disposing of our immense crop? Perhaps it would be better for the grower to select the very best for the market and use the rest to feed to horses and cattle. It is well known that apples are a nutritious food when properly fed. A peck of apples over which has been scattered two quarts of meal, is a good, nutritious feed, and as good for cattle as apple pie or apple sauce is for man. I have fed thousands of bushels to my cattle, and I have always felt that they were worth at least fifteen cents a bushel to me. If horses, for instance, are fed two quarts of apples a day or even more,

they will be better off in every way. It is well known that during the prevalence of the epizoötic among horses a number of years ago, apples were recommended as the antidote, and that the horses fed large quantities of apples were the ones that generally pulled through.

That apples are cheap does not seem to increase the consumption. Indeed, dealers tell me that they do not sell so many apples when they are so ruinously cheap as when they are higher. We have never seen a season before when there was not some outlet for the big apple crop. But this year the enormous bearing of the trees has been universal throughout the apple-bearing belt. It is only by a rise of price that the market will have a tendency to be stimulated.

The market demands quality rather than quantity and to supply this many of our apple growers have enlightened themselves regarding the best methods of growth, with a resulting increase in results. There are many conditions which contribute to the best growth of the fruit. Judicious pruning will tend to increase the quality and decrease the quantity. Then the picking, handling and storing of apples require good judgment. They should be picked by hand, carried in boxes or barrels into the cellar immediately and kept at a nearly uniform temperature. It should be remembered that apples that are grown under a higher state of cultivation require the most care in successful keeping.

There is no vegetable or fruit produced any more readily or cheaply than the apple, a fact which accounts for the market being glutted with it at times. A well-trained, properly cultivated apple tree is capable of producing ten barrels, and there is nothing else that will yield the same quantity if grown on the same patch of land.

21st January, A. D. 1897.

ESSAY

BY

WILLIAM H. SAWYER, Worcester.

Theme:—Incidents of Travel in Europe.

CHESTER is the only walled city now in England, and many of its buildings are at least 1000 years old. The Duke of Westminster, living only a few miles out of Chester, has the most beautiful residence in all England, and is the most wealthy duke in the land. It is worth a trip to Europe to see the Duke of Westminster's gardens. I have seen pinks and roses there that were as large as saucers, and much larger than any I have ever seen in this country. He has the finest herd of horses in all England; his stables are like palaces, and fit for any millionaire to live in. The drive from Chester to his estate is about five miles, and one of the most charming in England. A great deal of the ground he uses for his own homestead, and the rest he rents to outside parties for farms. He has a lot of deer in charge of wardens, and raises his own pheasants and grouse. These are hatched under hens, and after being brought up are turned loose in his domains; thus his own private hunting-ground is always well stocked with game. We were fortunate enough to be accorded permission, not only to go through the grounds and gardens, but the palace as well.

Victoria Park is kept well mown by a flock of Southdown sheep that are perfectly tame and never are molested by either children or dogs. We have no such grass as you see in England. The grass is always green and looks well. The trees in England are scattered promiscuously over the fields. They grow as large at the butts as ours, but they do not reach so high. The grass is just as green under the trees as anywhere else.

Coventry is the only city in all England that has electric cars. It

was in Coventry where the famous colored cathedral glass was made years ago, the manufacture of which has now become a lost art.

There are many reasons why the roads of England are in better condition than our own. It was on the drive to Coventry that we came across our first macadam road. The stones are all cracked by hand, as labor is cheap there. They are kept in good condition by constant repair, and in our drive to Coventry we came across three steam rollers in a distance of five miles. The conditions in England are very different from what they are in this country. They do not have the severe frosts we have here, nor do they have the heavy teaming.

To my mind some of the streets in London beat any in the world, not excepting Paris. They dig deep and make a firm foundation of cement, upon which they place hard wooden blocks, and the combination makes the nicest streets. There is no digging up of streets constantly for sewers, and so they can keep in good condition. The cabs in London are all rubber-tired, and the horses do not have calks in their shoes. Outside of the busiest part of London we saw some streets that were block-paved, but they were in better shape than any we see here.

Warwick is the finest castle remaining today in England. Another fine castle is Windsor castle, which has beautiful parks, and although they are owned by the crown they are open to the public. Indeed, no country seems to have so much ground for pleasure as England. All the people owning large estates are very liberal, and always allow the general public to enjoy their parks and groves. There are no signs "Keep off the grass," such as are so often seen here.

The series of parks in London is immense. One of the best known is St. James Park, although it is not so large as some of the others, and contains only about fifty-nine acres. In the very centre of it is a moat similar to that at Elm park. The park is used mostly for promenading and for crossing from one section of the city to another.

One of the largest parks in London is Hyde Park, having an expanse of 390 acres. This resort is used largely for driving. A road encircles the park, and on almost every afternoon most of the nobility may be seen there. One day I saw at least five hundred children, some with their nurses, playing on the grass in the park. That is the way, I think, our parks should be used, and it is my belief that we are inclined to guard ours too closely. London is well supplied with parks and they are kept for pleasure, not to look at. Those who think that London children cannot get much fresh air, are greatly mistaken.

Another thing that attracted my attention was the condition of the English horses. I did not see a poorly-fed horse while in England, neither did I see a horse with a full tail. Cab drivers seldom whip their horses, but on the other hand give them the best care and attention, and the horses show it. Exactly the contrary is true in Paris and the whole of France, where little feeling is manifested for the horse by those who use him daily for the more menial duties.

Crossing over the English channel we arrived in France, and as soon as you strike French soil you notice a radical change from England. The land is not so thoroughly cultivated, nor are the people so thrifty. But instead of the London fog it is almost always sunshine in Paris; the people partake of the climate and are light, gay and happy.

In Belgium the thing that most impressed me while there was the way in which the women had to work. It is a shame to see the drudgeries that are put upon the women. The peasant women go to public market each morning with their dog-carts loaded with vegetables. There they pitch their tents and sell their wares, after which they trudge back home. The women have dark and coarse features. The peasant class knows no more about good living than we do about economy. They live largely on bread and beer, a loaf of bread and a can of beer furnishing their only sustenance for the day.

In Holland the women also do a great deal of the work. All through Holland farming districts the house and barn are connected, the front part being for the people and the rear part for the cattle. In one house that I was in, the family and the cow lived in the same room, but this is of course an exception. The Dutch are a thrifty, hearty, kind-hearted people, and look a great deal like English, and many of them speak that language as well as they do their native tongue.

4th February, A. D. 1897.

ESSAY

BY

HENRY H. CHAMBERLIN, Worcester, Mass.

Theme:—Irrigation as a Means of Fertilization.

Mr. President, Ladies and Gentlemen of the Society.—I propose to read to you a paper on Irrigation and High Culture. I have chosen this theme, partly because of its great interest and importance; and partly because I had already given some attention to it, and had once read a paper on the subject to a local society, whose members, if any are present, will pardon me for again bringing it to their attention.

I may say that if I had been aware of the contract I had undertaken, I would not have tried to boil down to a single paper the vast amount of information on these subjects that has come under my notice. I am amazed to find what large books it takes to hold what I don't know.

In order to show the vast importance of irrigation to the farmers and gardeners, I have made an abstract of a table sent me from the Bureau of Agriculture at Washington, giving the percentage of water in many of the ordinary products of the farm and garden; and this will serve to introduce the subject with which I propose to attempt your entertainment and possible instruction.

And when it is known that "more than half the human race subsist upon the products of Irrigated Lands," the subject is seen to be a matter of paramount importance.

As showing its appreciation by the practical western farmer, it is related that a clergyman travelling through western Kansas, arrived in midday, at a farm showing evidence of abundant prosperity; after partaking of a hospitable meal, he piously remarked to the host, "I notice that you have very abundant crops; you should be very grateful

to Divine Providence;" to which the farmer replied: "Stranger, we don't care nothin' for Divine Providence here; we're under the Company's Ditch."

The following is the table referred to showing percentage of water in plants, and some other things.

Apples, gooseberries, currants, plums, strawberries, etc.,	77 to 83.	Oats in flower,	81.
Potatoes,	71.86 to 74.	Oats in seed,	4.68 to 20.80.
Beet Root,	82 to 88.	Melons,	90.38 to 94.
Beet leaves,	90.50.	Peas in flower,	81.50.
Carrots,	85 to 89.	Pumpkins,	90.32 to 95.40.
Carrot leaves,	82.20.	Rye in flower,	72.90.
Cabbage,	80.67 to 92.51.	Rye in seed,	6.85 to 18.18.
Cucumber,	95.20.	Sweet potatoes,	71.86 to 74.
Asparagus,	93.75.	Turnips,	89.46 to 92.
Lettuce,	94.14.	Wheat in seed,	5.33 to 14.14.
Bananas,	74.	Barley in seed,	4.53 to 19.33.
Maize in flower,	82.20.	Onions,	85.90.
Maize in seed,	4.68 to 22.20.	Squash,	97.

Fluids.

Lager beer, 99.50.
California wine, 75.
Animals, including man, 71 per cent.
Total abstinence people a little more.
Milk—not determined—depending upon various considerations. (City water.)

FOREIGN IRRIGATION. INDIA.

Before inquiring what has been done in our own country, it may be well to recur to the history of irrigation in other lands.

Irrigation has been practised in India for thousands of years; and it is not too much to say, that without its use, India would long since have become unhabitable and unhabited.

Several years ago Professor Herbert M. Wilson visited India, with a view to compare the systems of irrigation practised there with those in use in this country, and adopt any improved methods he could find. His report, covering 200 pages of the "Report of the Geological Survey" of Major Powell, for 1891, shows that the Government of India has been alive to the importance of the work

and gives promise that the periodical famines of that country will soon belong to the history of the past.

Without attempting to give any adequate idea of the great works achieved, and in progress there, it may be stated that at the end of the year 1888 there had been completed in India 5,520 miles of main canals, and 17,150 miles of tributaries, irrigating over 10,000,000 acres, besides minor works watering 2,000,000 acres more.

IRRIGATION IN EGYPT.

The lands of Lower Egypt, as is well known, are annually enriched by the overflow of the Nile, which every year leaves a deposit of silt that keeps the soil constantly fertilized: but if this deposit becomes dry and baked it is no longer useful, and the crops fail; so that for many centuries the inhabitants have resorted to various remedies. At the present time the Government is largely engaged in this work. In 1885 the "Pasha" made an agreement with the Irrigation Society of Behera, by which it undertook to pay $210,000 a year for thirty years for a supply up to a certain level; with a maximum of about 2,604 cubic feet per second at low Nile, lifted by two powerful steam-pumps into the canal of Behera; besides which, "In 1864 the number of wooden water-wheels used in Central and Lower Egypt was about 50,000, turned by 200,000 oxen, and managed by 100,000 persons, who watered 4,500,000 acres.

IRRIGATION IN WESTERN AFRICA.

Perhaps the most wonderful feat of irrigation is that of a portion of the desert of Sahara. This desert occupies a large portion of Western and Northwestern Africa, lying just south of the provinces of Morocco, Algiers, Tunis and Tripoli, and covers an area of fifteen degrees north latitude by twenty-five degrees of longitude, including many millions of acres of barren sand with an occasional oasis; it has been for thousands of years looked upon as the barrier to commerce and the terror of travellers, who have sometimes been overtaken by its blasting, shifting sands and buried beneath them. All New England school-boys remember the old conundrum: "Why do the Arabs that traverse the desert of Sahara never go hungry? Because they always live on the sand-w(h)ich-is under their feet." It was simply a sandy desert, traversed only by occasional merchant caravans, on the constant watch for freebooting Arabs.

But lo! the magic change! All the southern half of Algiers, comprising 330,000 square miles (211,200,000 acres), is beginning to be

put under successful cultivation, by means of Artesian well irrigation. There are now over 13,000 wells in full operation, ranging in depth from 75 to 400 feet; the water flowing from them is collected in reservoirs, from which it is conducted by mains and laterals over the land. It is estimated that 12,000,000 acres have already been reclaimed, and this area is under cultivation. As a result, Algiers has become a great wine-producing country, about 120,000 acres of the old desert being planted to the vine; growing immense crops of grapes by means of irrigation, thus literally turning water into wine, without a miracle.

IRRIGATION IN AMERICA IN EARLY TIMES.

Irrigation was practised on this continent as long ago as when Cortez made his raid on Mexico, where he found the Pueblo Indians and other tribes raising immense crops of Indian corn by means of their crude methods of irrigation. In California the early Franciscan monks carried on the practice extensively, from the first establishment of their missions. These early methods were crude, imperfect and wasteful; enterprise and science are applying new methods in such a manner as to utilize to the utmost the abundant means of fertilization which nature has made available. And it is in our own country that the full benefit of irrigation, as the handmaid of Agriculture and Horticulture, is to be demonstrated.

The Geological Surveys, conducted by Major Powell, report the "Arid region of the United States to contain 1,340,000 square miles, equivalent to 857,600,000 acres; but that does not include all the area where irrigation is or should be used, and where it must be practised in the near future."

This vast area includes a region where, except little places on the mountains, agriculture is practically impossible, year by year, without an artificial supply of water. If we include all the area where agriculture is dependent in whole or in part on irrigation, one-half the land in the United States, exclusive of Alaska, would be embraced therein. Of the above area it is estimated that about 500,000,000 acres can be reclaimed by irrigation.

Mr. Bronson, testifying before a committee of Congress, makes the statement that in Texas alone 1,500,000 acres can be reclaimed by the judicious use of water. The Geological Report for 1890-91 states that there were designated for reservoir sites up to date of the report, some one hundred and fifty locations; of these, 32 were in California, 46 in Colorado, 28 in Montana, 37 in New Mexico, and 2 in Nevada.

What have been added since cannot be readily ascertained. The canals and irrigating sluices already dug and in process of construction cannot be ascertained, but may be reckoned by the hundred, and the immense products obtained from them are immeasurable.

In the State of Washington, the Northern Pacific railroad is building a canal sixty miles long, to be fed by water from the Yakima River, at a point below that at which the water issues from the mountains. This canal, or ditch as they call it, will moisten thousands of acres that were once selling at $1.50 per acre, but are now held at $45 per acre. With the sale of these lands, stock in the irrigation company is offered, so that when the land is all sold, the stock will be owned by the farmers. A second canal, 250 feet higher, is contemplated, and added supply of water is expected from the large lakes on the eastern slope of the Cascade Mountains.

It was stated before the Congressional committee that 1,000,000 acres could readily be irrigated by the Rio Grande alone, and that the area might be indefinitely increased by proper storage and careful use.

In Calusa County, California, there are two classes of lands that require irrigation: First, land which will yield crops without irrigation, but which would double their crops under the influence of a regular supply of water; Second, desert lands which will yield nothing at all without an artificial application of water, either from irrigation works or artesian wells, but will yield heavy crops under irrigation, wheat producing 40 to 42 bushels to the acre. In Las Cruces, New Mexico, their crops are corn, oats, barley, wheat and sweet potatoes; with irrigation they cut 6 tons of alfalfa to the acre; grapes and all fine fruits grow abundantly; some of the vineyards produce 16,000 to 24,000 lbs. of the finest grapes to the acre. The same ground not irrigated produces nothing. In New Mexico it is estimated that ten acres of irrigated land are more productive than forty acres without irrigation.

ARTESIAN WELLS.

Another source of water supply already utilized to a considerable extent, and rapidly increasing, is found in the Artesian wells; these have been driven at various points, and in the great valleys afford a copious supply of water, but on mountain slopes they are useless. Wells of this kind have been procured in great number in California, in Riverside and in the San Joaquin Valley; others have been found in the desert of Utah. They are also found at various points in Mexico. But the greatest number of these wells, with the most abun-

dant supply of water, is found in "the famous San Luis Park of Colorado." Owing to the large area of mountains surrounding it, this has an unusual number of "lost rivers," supplying the subterraneous water in abundance. Already over 3700 flowing wells have been sunk.

IRRIGATION IN NEW JERSEY.

In the New Jersey Station irrigation was not begun until demanded by drought in the fall, and was continued from September 17th until the crops were harvested, varying with different plants from October 4th to 28th. The water was distributed in channels between the rows from the city water-works by means of inch faucets and hose.

In the case of egg-plants and tomatoes no substantial results were noticed. The result of irrigating bush-beans was very satisfactory, the yield being largely increased and the quality superior. The period of fruitage with peppers was prolonged and the yield nearly doubled. The soil of the celery plat was not the most favorable, but the yield of the irrigated plat was *more than doubled.*

The market value of the irrigated plat was *eight times* that produced without the aid of artificial watering. The loss from superfluous leaves and roots in preparing the plants for market was 28 per cent. in the irrigated plats against 40 per cent. in the non-irrigated.

When it was known at my house that I was to read a paper on irrigation, I was instructed to talk especially on the necessity of planting trees as a means of saving the streams; but as I have no reliable data on the subject, I omitted to discuss it; but it is perhaps the most important matter at present demanding our attention. Perhaps no more patriotic enterprise, or one eventually more profitable to the farmers than a few acres of the roughest portion set to growing trees; it would conduce more to the public health and happiness than any large contribution in money. In the meantime, and while the trees are growing, I think the farmers would be justified in any seeming profanity if they should "dam" every drop of water that rolls down their hillsides.

"May I be allowed to add a few words to Mr. Chamberlin's statements about irrigation, because it seems to me he does not go to the root of the matter. In order to be able to irrigate land, the first requisite is to possess the water to irrigate with; and in order to possess the water, it is of the utmost importance that some measures should be taken to ensure a never failing supply. In other words, the State of Massachusetts should appoint a competent Forestry Commission, who will do for the State what the United States Government is doing for the national reservations. Mr. Fernald says, 'without forest management no rational water management is possible.' Two centuries ago the

interior of the State was almost an unbroken expanse of woodland; now how rapidly the forests are disappearing under the injudicious use of the axe. It is probable that the removal of so much standing wood has had a bad influence on the climate and surface of the earth. It is estimated that forests, in order to keep up the right conditions of soil and climate, should occupy one quarter of the land. To quote from a friend who made a study of the subject, 'they affect the temperature, the movement of air-currents, the character and succession of the seasons, the amount of rain and the manner of its fall, as well as its action for good or harm upon the soil.'"

The influence of forests in protecting the water-supply is well illustrated in the case of Greece. In ancient days she possessed 7,500,000 acres of forest. To-day she has hardly 2,000,000 acres, and the scarcity of water and the injurious climatic effects are traceable to the destruction of the trees. In France when the forests had been felled or destroyed by fire the government expended more than a million dollars annually for their restoration. Palestine, two thousand years ago, was a well wooded country, now it is mostly sterile and desolate. Its forests are hewn down, its soil washed by the torrents of a thousand winters, its river courses dried. In the centre of the great desert of Sahara, Champollion, the French explorer, found traces of old rivers and tree-stumps buried six feet deep in burning sands. "And so," he says, "this desert may once have been a region of groves and fountains, and the abode of happy millions. The hand of man has produced this desert, and I verily believe every other desert on the face of the earth."

I should like to quote many other instances of the disastrous effects of forest destruction nearer home, some of which are mentioned in Mr. Wilson Flagg's little book published some years ago, called the "By-Ways of New England"; but I will not take your time, which may be more profitably occupied. I will only add that I think the preservation of the forests is a subject deserving the consideration of every person who has the well-being of future generations at heart, or who wishes to retain the beauty and comfort of the State we are so proud of. To accomplish this end, a State Forestry Commission is of the utmost importance. G. R. C.

Some statistics are given in these reports comparing the crops on these irrigated lands, in the arid regions, with those of the most productive regions in the rain belt, showing a higher average in the former; in the cultivation of fruits especially, the irrigated lands give a most favorable comparison. On one fruit farm in the arid region, the income for 1890 was from $211 to $600 per acre. Much attention is now paid to irrigation in parts of Europe, but I will mention only a single instance: Below the city of Milan, in Lombardy, 22,000 acres of grass land irrigated by the waters of the river, a tributary to the Po, which carries the sewage of the city, yield from 8 to 10 tons of hay to the acre, while some separate meadows produce a crop of 18

tons to the acre. In the face of such statements it would seem that our friend Mr. Pond must "pale his uneffectual fires."

The fact last mentioned, the use of sewage, suggests the subject of high farming, or as it has been called *intensive* farming, as contrasted with *extensive* farming; and here it may be mentioned as pertinent to our subject, that 100 years ago, or a little more, the number of landed proprietors in France was 150,000; at the present time there are over 4,000,000. In view of the change in the condition of the great majority of the French people, it is not strange that the enthusiastic philanthropist, Wendell Phillips, astounded and shocked the dilletanti of Boston and Cambridge when, in his *Phi Beta* oration, he declared that the French Revolution was "the greatest, the most unmixed, the most unstained and wholly perfect blessing Europe has had in modern times, unless we may possibly except the Reformation and the invention of printing."

And so far have they carried the intensive method that, near the city of Paris, the rent of some market-gardeners is $126 per acre. Even at this rate the French market-gardeners pay an "octroi" on all their products that go to Paris, exporting largely their crops to London. And it is also true that while in England, Germany and Russia the farmers say that wheat raising is unprofitable; while even in New England and New York we have given up wheat raising as a lost art, —yet in France on their small farms they have doubled the acreage and quadrupled the yield of wheat within the last 50 or 60 years.

I will mention one more instance of successful high farming, that of the district of Lafalle in East Flanders. The population consists of 30,000 farmers, who, besides raising their own food, export agricultural products which enable them to pay rents to the amount of $15 to $25 per acre. Their regulation crops are from four to five times as large as those of the fertile lands of Texas, Georgia and Illinois. On their little territory of 37,000 acres, two-thirds of which area is under cereals, flax and potatoes, they keep 10,720 neat cattle, 3,800 sheep, 1,815 horses and 6,550 hogs. The district contains a population denser than that of England: yet, notwithstanding the ever-increasing rents, all the inhabitants are well fed and well-to-do; and this is simply owing to high cultivation.

CULTURE UNDER GLASS.

I have left but little time and space for this branch of the subject, and will allude to it very briefly. We are apt to think of those Channel islands, Jersey and Guernsey, as only the habitat of the cows that are raised there, and otherwise of no importance; whereas their fields

and gardens show results as much ahead of ordinary farming as Hadwin's Guernseys or Kendall's Jerseys go ahead of a Texas stump-tailed heifer that gives a pint of blue milk a day when in full flow.

In the Island of Jersey, which is still a land of open field culture, its farmers obtain from their land twice as much as the best farmers in England. This island, like the suburbs of Paris, is a land of market-gardening, and it has lately developed largely into greenhouse culture; there are greenhouses all over the island, they rise amid the fields and from behind the trees, and they are piled upon one another on the steep slopes of the hills.

The island cultivates 28,717 acres in roots, and nourishes its population of about two persons to the acre; the chief crop consists of potatoes, of which they grow about 70,000 tons each year, equal to 2,613,000 bushels, which would represent a money value, to-day, of 2,000,000 dollars; they export, mostly to England and America, 1,500 cows each year. So that, altogether, they obtain agricultural products to the amount of $250 per acre, for each acre of the surface of the island. And yet Jersey hardly knows what intensive culture means; to learn this, one must go to the sister island of Guernsey, which nourishes 1300 persons on each square mile. Guernsey, like the suburbs of Paris, is a land of market-gardening, which has of late largely developed into greenhouse culture. All over the island, especially in the north, wherever you look you see greenhouses; they rise amid the fields and from behind the trees; they are piled upon one another, on the steep slopes of the hills facing the harbor.

At present Guernsey exports every year 500 tons (say 1,120,000 lbs.) of grapes, representing a money value of $200,000. A Mr. Bashford has vines (under glass) covering 13 acres, in regard to which, a well-known English writer says "the money return of these 13 acres far exceeds those of an English farm of 1,300 acres." The last year's crop was 50,000 lbs. of grapes, 80 tons (179,000 lbs.) of tomatoes, 60,000 lbs. of peas and beans, besides other crops. Guernsey cultivates 28,000 acres in roots, raising of potatoes alone 2,600,000 bushels, with a money value of over $2,000,000; they export 1,500 cows each year; and altogether they produce $250 for each acre of the island.

When one walks through these glass-roofed gardens which never know failure, and which yield successive crops throughout the year, one is reminded of the gardens of Alcinous, wherein "the fruit they bear falls not, nor ever fails in winter time nor summer, but is yielded through the year. The ever blowing west wind causes some to swell and some to ripen; pear succeeds to pear; to apple, apple; grape to

grape; fig ripens after fig. At these gardens' farthest bounds were beds of many plants that blossom all the year."

ELECTRICITY.

After preparing this paper I found a paper on Electricity as applied to Horticulture, which threatened to nullify all I have said on the subject in hand, and I have thought it might be interesting to give a short synopsis of it. Passing over the account of the use of electricity as a dynamic power in horticulture and agriculture, I will quote the statement of some of its direct effects on vegetation. One experiment of applying an electric current to the seeds and afterwards to the soil, resulted in raising radishes 17 inches long and 5½ inches in diameter. Some five years ago the faculty of Cornell University began some experiments, with most gratifying results; early vegetables, such as spinach, radishes, lettuce, etc., were brought to maturity in about half the time usually required.

Four years ago, Mr. Rawson, a market-gardener in Arlington, noticed that the flowers in his garden which were subject to the electric lights, grew rapidly and vigorously, outstripping all others in the garden; so he set up in his large hothouse a similar light. The result was that the early vegetables grew in a much shorter time than in the ordinary way, while the quality was much superior, and the profits of his business were increased from 25 to 40 per cent.

The French have put in practice a process of gathering electricity from the atmosphere, which is done by laying a network of wires in the garden, and connecting them with a copper wire that runs to the top of a pole 40 feet high, surmounted by a collector, insulated by a glass knob. The height of the pole enables the collector to gather the electricity in the atmosphere from a large area, and when transmitted to the garden through the wires it produces better results than the electricity generated from a dynamo. By applying the arc-light directly to the plants, their growth was so accelerated that many ran to seed before edible leaves were formed. I have never learned of but one parallel to prematurity like this: it was that of a child named Heinecken, who knew the incidents of the Pentateuch at the age of one year; had mastered all of the Sacred History at two years; and was intimately acquainted with modern and profane history and geography, and spoke French and Latin, besides his native tongue, at the age of three years,—at the age of four, he died of old age.

Ladies and Gentlemen: Thanking you for your kind attention I will close by reading a letter from one who has experimented with water in this State:—

Fitchburg, Mass., Feb. 2, 1897.

MR. CHAMBERLIN,

Dear Sir:—

Yours at hand and would say my tests the past year in irrigation were limited, as I did not get into line till a little late, but what I did was very satisfactory.

My supply is city water, price 10 cents per 1000 gallons. I connected with the city main by 3-inch steam pipe, above ground; from this a 2-inch pipe runs the length of my fields on the upper side, "across," so as to irrigate each and every alley. Rows are five feet apart and I allow each row to mat three feet wide so you see I get a two-foot alley, and in this alley make a gutter three inches deep in which to irrigate "down hill." Now this two-inch distributing pipe is drilled and tapped every five feet and a common sink faucet screwed in, through which I adjust the size of stream wanted to run to the end of the rows continuously, and when once adjusted I do not change the faucets, only shut off water or let it on at the connection with the 3-inch supply by a valve. So you see it is only a minute's work to start the plant to work; then it takes care of itself.

I have one field of five acres on which can be put 15,000 gallons per hour as long as you want it and with hardly any attention. Have run these streams in this gutter over 500 feet, but do not like to do it; rather have shorter distances, which I easily arrange for if rows are too long. On my five-acre field my 2-inch distributing pipe is 900 feet long, with a faucet every five feet, so you see it takes a lot of water to supply it, but at my farm I get 250 feet head. In 1895 my crop was 40 per cent. No. 1 and 60 per cent. No. 2, *without* irrigation; in 1896, 70 per cent. No. 1 and 30 per cent. No. 2, *with* irrigation. Am well satisfied with it so far. I noticed the irrigation kept the fruit growing and did not allow it to ripen off early and small.

Very truly,

A. A. MARSHALL.

11th February, A. D. 1897.

ESSAY

BY

ELIJAH W. WOOD, West Newton.

Theme:—New Fruits, and New Methods in Fruit Culture.

The fruit crop the past season has been exceptional and unusually irregular. There was no material injury to fruit-bearing plants or trees during the winter 1895–96, except to the peach trees, on which the fruit buds were almost entirely killed throughout New England. Later in the season the strawberry, through some unfavorable influence, while the vines were apparently healthy and vigorous, did not in many localities produce the usual quantity of fruit.

The apple crop was exceptionably abundant. The over-supply for the home market has caused the shipment of an amount far in excess of any previous year to foreign countries; with the result that the large quantity sent, with the limited and imperfect facilities for transportation delivering the fruit in a more or less damaged condition, the returns have as a rule been unsatisfactory and have not compared favorably with prices realized in the home market, where the prices as a whole have been lower than for several years, though A No. 1 fruit has sold readily and brought fair prices. We have the report from one grower in the western part of the State, who gives his orchard special care by spraying and thinning the fruit, that he has disposed of his whole crop of thirteen hundred barrels at an average of one dollar and seventy cents per barrel.

The lesson taught the apple-grower by the past season's experience would seem to be—1st, the necessity of better care of the orchard by spraying to reduce the injury by insect pests and prevent the apple scab; 2d, thinning the fruit, thus securing a larger and more uniform size and causing the trees to produce a partial crop on the alternate or off-bearing year; 3d, allowing the trees to have the benefit of all the

ground they occupy after having attained their natural size; 4th, furnish sufficient fertilizer to keep the trees in a healthy condition.

It has become the established habit of the apple orchards in the New England States to produce by far the larger crops on the even calendar year. The bearing year may be changed by picking the blossoms from the trees on the even year, and if done when the trees first commence producing fruit may be done with comparatively little labor, and until there is a more equal production in successive years would prove profitable for the growers. This method of equalizing the production of the apple crop is not the result of recent practice. Downing, in his standard work on "Fruit and Fruit Trees of America," says: "The bearing year of an apple tree or a whole orchard may be changed by picking off the fruit when the trees first show good crops, allowing it to remain only in the alternate seasons which we wish to make the bearing year."

While the varieties of the apple that have been tested or brought to public notice may be numbered by the thousand, the number selected from the best sufficient to furnish fruit the entire year is comparatively few, and for the most profitable commercial purposes still more limited. The progress of a new apple, whatever its merits to general favor, is slow. The dealers prefer to handle the well-known varieties, and consumers know by name the apple better than any other fruit and prefer to purchase such as they have tried and have proved satisfactory.

Worcester County has produced several valuable varieties of the apple; of those having received favorable notice in the printed lists are the Hubbardston, Mother, Leicester Sweet, Magnolia, Priest's Sweet, Sutton, Washington Royal or Palmer, Fall Orange, Hill's Favorite, Lane's Sweet, Washington Sweet and Knapp's Harvey.

There have been no new varieties shown within the past few years deserving special notice, though some varieties long known are receiving more attention and coming into more general cultivation. The Mackintosh, under cultivation almost a hundred years, has not appeared in our exhibitions until recently; it is medium size, perfect form, a bright red or crimson color, excellent quality and a superior dessert apple. The Wealthy, a western apple, has recently made its appearance upon our exhibition tables from several growers; it is a handsome fruit and of excellent quality, and those having had experience with it speak favorably of its growth and productiveness. The Palmer and Sutton if more generally grown would become valuable market varieties, especially for a home market. The Fletcher Rus-

set, origin Acton, Mass., is the most attractive of any of the russet varieties. Jacob's Sweet, origin Medford, Mass., a very large, handsome Sweet, recommended by the National Pomological Society.

Very little that is new can be said, either of the varieties or the cultivation of the Pear. More efficient work for the benefit of the growers of this fruit has been in weeding out undesirable and unprofitable varieties. The public are largely indebted to Marshall P. Wilder and C. M. Hovey for their long continued effort in testing the different varieties of the pear. Col. Wilder showed at one exhibition in Boston four hundred and seventeen varieties, and Mr. Hovey at the same exhibition more than three hundred; the former being asked how many of his varieties he would recommend his friends to grow, replied "not more than ten."

To those intending to set out young trees of this fruit and desiring information as to varieties, I would recommend that they attend the exhibitions in Boston or of this Society, also consult the prize schedules of the two societies. Those schedules are believed to contain the names of all the varieties at present desirable for general cultivation; and it will be found that the prizes are graded, the higher and larger number being offered for those varieties considered the most desirable.

It may be desirable to grow a limited number of the early varieties for home use; the Summer Doyenne, Giffard, and Clapp's Favorite will supply this want. The earliest variety of any considerable market value is the Bartlett. This well-known pear is more largely used than any other, both for the table and preserving; it is seen in glass jars on the shelves and in the windows of all grocers, where it proves a tempting advertisement; it comes into bearing early and almost invariably produces an annual crop. The Seckel, Sheldon, Louise Bon of Jersey, Marie Louise and Hardy are October pears deserving a place in the amateur's collection. The Bosc, Dana's Hovey and Comice are all excellent varieties; and ripening in November, when the market is not over-supplied with table fruit, makes them the most valuable of all the varieties. The Dana's Hovey should be allowed to remain on the tree until they begin to fall of their own accord, then gathered and kept in a cool place until the middle of November, when if brought into a warmer temperature the color will change from a dull green to a yellow shade and their quality will fully merit the name which Downing gives them, the Winter Seckel. With a suitable storeroom for winter, the Anjou, Vicar, Josephine of Malines, Duchess of Bourdeaux and Winter Nelis are the most desirable varieties.

Our seasons are hardly long enough for the Winter Nelis to fully mature ; though by severely thinning the fruit and allowing it to remain on the trees as long as possible without freezing, and when gathered placing it immediately in cold storage, it may be kept from withering ; it is of superior quality and the only first-class pear I have ever seen brought from California, where it ripens perfectly.

There should be added to the above for market purposes the Angoulême and Clairgeau, both to be grown in a strong, rich soil on quince stocks.

Nowhere is the pear more easily grown or better fruit produced than in our own State ; but being more reliable for an annual crop than the apple, requires more care in cultivation and more fertilizers to secure the best results. Most varieties of the pear set more fruit than the trees can mature and produce good specimens, and require thinning.

This is especially true of such varieties as bear in clusters, notably the Seckel and Dana's Hovey.

While the standard tree or pear on its own roots will grow and produce fair fruit wherever the apple can be successfully grown, failure frequently occurs in setting dwarf trees in soil not adapted to their growth. The roots of the quince are compact, spreading over a limited space and require a deep, rich, moist soil; and the pear on these stocks will invariably fail in a light, dry soil, yet the dwarf is indispensable to the best success in growing this fruit. Downing in his time doubted whether the dwarf trees would ever be used to any considerable extent in orchard growing, yet some of the largest growers in the town of Revere set almost entirely dwarf trees; but under their high cultivation they get the benefit of their early bearing, and in the meantime the trees are throwing out roots from the pear stock and becoming to all intents and purposes standard trees. In selecting dwarf trees choose only those that are budded close to the crown of the roots and plant the trees so that three or four inches of the pear stock will be below the surface of the soil.

The Peach is the most uncertain, as it is the most desirable for the table, of all our tree fruits, and formerly was grown with the least care. Some of us can remember when peaches were so plenty as to be of little or no commercial value. Few gardens however limited in area failed to contain one or more peach trees. There were no special varieties. The trees were seedlings and bore the natural fruit. There were two distinct classes, called Rareripe and Frost peaches: the former varied in size, color and quality; the latter were a pale green color and remained hard upon the trees until early frosts, and

were chiefly used for preserves. Between 1830 and 1840 budded trees of several varieties were introduced into this vicinity from New Jersey, where the disease known as the Peach Yellows had existed for many years; some orchards being entirely destroyed, and all more or less infected. With the introduction of these trees the disease was introduced into New England, where it has remained to the present time, exerting its baleful influence, not only upon the trees, but by producing infected pits and buds by which young stock became diseased.

The long continued reproduction of the same varieties from an enfeebled stock has aided in the decay of the strength and vigor of the peach.

The florist who cultivates the succulent plants knows he must make frequent return to the seed to keep up the strength and vigor of his plants. The Verbena and Petunia under ordinary cultivation cannot be reproduced from cuttings more than five or six years without becoming so enfeebled as to be worthless for stock. The same rule holds true of the hardier and longer lived plants and trees. Dr. Van Mons, whose experience in raising seedling fruit trees was more extensive than that of any other man, declares it as his opinion that the more frequently a tree is reproduced continuously from seed the more feeble and short lived is the seedling produced. Downing, in 1845, after describing this disease and its effect upon the trees and fruit, expresses his opinion upon this branch of the subject as follows: "Is it not evident from these premises that the constant sowing of the seeds of an enfeebled stock of peaches would naturally produce a sickly and diseased race of trees? The seedlings will at first appear healthy when the parent had been partially diseased; but the malady will sooner or later show itself, and especially when the tree is allowed to produce an overcrop."

It is almost the unanimous opinion of the more experienced growers of peaches that this disease is contagious and spreads from tree to tree. Twelve States have passed laws requiring all diseased trees to be destroyed and appointed officers to see that the law is executed. Michigan, where the growing of peaches is an important industry, was among the first to take legal action, and they claimed to have stamped out the disease throughout the State. The principal opposition to this legislation comes from those who have diseased trees in their orchards and desire to sell the fruit from them as long as they continue to bear. This seems a short sighted policy, as they thus expose their orchards to contagion and place on the market an insipid and worthless fruit.

It will be remembered that some years ago there was alarm among the farmers, fearing they would be obliged to give up the cultivation of the potato, so many rotted in the field or soon after they were gathered. A small farmer in Vermont brought to notice a new seedling variety called the Early Rose. From that have come many new varieties, mostly with slight variation from the original. The old varieties were cast aside and the disease among potatoes reduced to a minimum. Would that some one would give to us a seedling Early Rose peach that should restore to this most delicious of all our tree fruits its original strength and vigor!

The cultivation of the Plum has been, and is at present, limited in this State on account of two enemies of this fruit. The Black Knot destroys the tree and the Curculio destroys the fruit. The practice in dealing with the Knot has been to cut them out and paint the wound with shellac; but by this treatment the remedy often proves as bad as the disease, as the constant cutting destroys the form and eventually the life of the tree. When the Knots first make their appearance they may be seen by the discoloration and swelling of the bark on the limbs of the trees. Recent experiments have shown that if they are painted over with kerosene mixed with some pigment (ordinary whiting answers the purpose) to the consistency of thick paint, to prevent it from running down the limbs, it kills the wart and does not disfigure or apparently injure the tree; it is also claimed that spraying the trees with the copper solutions recommended for fungus growths will prevent their appearance. The usual method of combatting the Curculio has been where there were but few trees to spread a sheet upon the ground under the tree, and with a sharp rap upon the limbs of the trees with a padded mallet, the insects would fall upon the sheet when they could easily be gathered and destroyed; but if any considerable number of trees are grown, the most economical and efficient method is to enclose the space allotted to the trees and keep fowls in the enclosure, and by an occasional jarring of the trees the fowls will do the rest.

The Plum makes a quick growth and comes early into bearing. It adapts itself readily to different locations, though it succeeds best in a heavy clay soil. Among the varieties of plums the Green Gage has always held the same relation that the Seckel holds among pears. The Washington, Jefferson and McLaughlin approach it closely, and many think the latter fully its equal in quality. The Bradshaw and Lombard are more largely grown for market than any others, and where the two enemies are kept at bay, prove a very profitable fruit.

There have been introduced within the past few years several Japanese varieties of the plum. It is yet too early to estimate the value of this addition to our old varieties. Some of the fruit has been shown at our exhibitions of excellent quality. Whether the trees will prove as hardy as our old varieties has not been shown.

I would suggest a word of caution to those who propose to purchase this class of trees. Two or three nurseries in New Jersey have been largely interested in disseminating these trees, not only supplying growers, but furnishing other nurserymen, and the trees have been found to be badly infested with the San Jose scale. Some parties having ascertained the condition of the trees after having set them in the ground have dug them up and burned them to prevent the scale from spreading to other fruit trees.

The prices at which Grapes have sold the past few years have not been encouraging to the extension of their cultivation as a market product. The large quantities sent into our markets from the Middle and Western States create so close competition that there is little profit for the grower. A disadvantage under which our growers labor is the liability of the loss of the crop by either a spring or early fall frost. Some of the largest growers have adopted the practice of girdling their vines, by which they secure their crop about two weeks earlier, and the berries and the bunches are larger and more attractive in appearance.

It was formerly thought that girdling the vines affected unfavorably the quality of the fruit. Analyses by Prof. Goessmann at different times in the season showed that fruit from the same trellis of girdled and ungirdled vines the former contained more sugar and less water than the latter. The practice of girdling is worthy the attention of the amateur growers, as by spraying to prevent mildew, and girdling to hasten maturity, some of the crosses with foreign varieties of better quality might be successfully grown. Vines bearing close-growing bunches like the Delaware and Moore's Early cannot be successfully girdled, as the increase in the size of the berries in such compact form causes them to burst and decay. The Worden and Concord are much improved in appearance. The Grape delights in a warm dry soil, and the chances of failure may be reduced by the selection of an elevated situation declining toward the south or southeast.

The methods adopted by the Strawberry growers are so uniform there is little can be said upon that subject. It is almost the universal practice among market growers to set the plants in the spring

in rows from three to five feet apart and from eighteen inches to two feet apart in the rows, depending upon the habit and free growth of the variety, and allowing the plants to cover the ground except narrow paths between the beds. For the garden or exhibition, planting in single rows or in hills may prove more satisfactory.

It requires two years to grow a strawberry crop, therefore the ground should be thoroughly prepared and enriched sufficient to mature the fruit the second year. If this is done and the ground kept clear of weeds the first season it will require no care the second year. It is impossible to recommend varieties that will prove equally satisfactory under different conditions. There is no fruit that varies so much in different, though nearby locations.

The leading varieties as seen in the Boston market are Belmont, Bubach, Haviland, Leader, and Marshall. The Marshall has no peer as an exhibition berry. Last year was the first that it had been fruited as a field crop, and there was some complaint that it did not prove sufficiently productive to make it desirable for that purpose; but its size, quality, and beauty, must make it a favorite for the garden and exhibition.

In the strawberry we have an illustration of deterioration from continued reproduction by offsets or runners. None of the popular varieties of twenty-five years ago are in cultivation at the present time; not that the new comers are superior in any marked degree, but the old varieties were worn out and failed to produce crops. The Triomph de Gand, Jucunda, Laconstante, and even Hovey's Seedling, which antedates them all, would lose little in comparison with the popular varieties of to-day, either in beauty or quality.

The present standard of our fruits can only be sustained by continued renewal. The fruit growers have not kept pace with the florists in improvement made upon scientific principles, as note the improvement in the Carnation Rose and Chrysanthemum made within the past few years; and this advance has been made by hybridization, by working for a definite purpose, by crossing parents, each of which had some distinct points of excellence in size, form, color, or vigor in growth. The stock raiser breeds for a definite purpose, crossing parents that possess a combination of the qualities he seeks to secure. To the fruit grower this field of investigation and experiment should prove a fascinating one, though requiring study, care, and perseverance. It is receiving more attention among horticulturists than formerly.

In the horticultural department at the Agricultural College at

Amherst there is an effort being made to grow all the known named varieties of the small fruits under as nearly as possible like conditions. They had under cultivation the past year one hundred sixty-four named varieties of grapes and four hundred seedlings—seventeen varieties of currants—twenty-one varieties of blackberries—twenty-four varieties of raspberries—twenty-six varieties of blackcaps—twenty-three varieties of gooseberries—two hundred and six varieties of strawberries and four hundred seedlings. This affords students and visitors an excellent opportunity for comparison of the different varieties in the habit of growth and quality of fruit.

While fruit supplies one of the most enjoyable luxuries of the table and one of the most substantial articles of food; while we have a soil and climate unequalled for the production of some of the best known and extensively used fruits that the earth produces; with a home market constantly increasing and a foreign market yet in its infancy and confined to a limited number of foreign ports, but capable of much wider expansion,—the fruit growers have encouragement to persevere in their calling, with reasonable assurance that their returns shall compare favorably with those engaged in any of the agricultural pursuits.

18th February, A. D. 1897.

ESSAY

BY

J. LEWIS ELLSWORTH, Worcester.

Theme:—The Family Vegetable Garden.

THE vegetable garden is of great importance on every farm, large or small. Considering the wholesomeness of vegetables, the importance of the garden cannot be overestimated. The direct benefit to the owner cannot be computed from a money point of view.

The gardener should first have a definite plan of the crops he intends to raise, and the size and character of his garden. The trouble with many who start a garden is that they do not begin to think what they want until after the ground is ploughed. Then they have to make up their minds quickly, rush to the seed store and buy the first thing that comes handy. The two most important factors of a successful garden are the cultivation of the soil and the seed.

Thorough ploughing and a fine seed-bed are needed. The land should be ploughed twice, first deeply; then it should be thoroughly manured, and then ploughed again, not so deeply as before, as it is not good to cover the manure too much. Then the garden should be given a light harrowing and should be smoothed off with a drag to break the lumps and make a fine seed-bed.

Great attention should be given to the after-cultivation. I begin cultivation even before seeds start, and in that way destroy the early weed seed even before it sprouts. Go through the beds with a wheel hoe, and as soon as the seeds show, continue the use of the hoe and harrow all summer until the maturity of the crop.

To make a success of gardening good seeds are necessary. Without them, all the labor, the use of the land and the implements are in vain. Seeds should be fully ripe when planted, and the large, full seed contains more nourishment for the young plant than does the

seed that is not so ripe. The seed must give the first nourishment to the plant. The seed business has entirely changed in the last quarter of a century, and has now become a business of great magnitude. There are now employed in the business, improved system, better knowledge and facilities. Formerly, farmers raised their own seeds, perhaps finding it necessary on account of the difficulty in buying good seeds. But now, with the testing system, we have no difficulty in getting good seeds. There are thoroughly reliable seed farmers in all parts of the United States, Canada and Europe. Canada produces most of the pea seed; California, lettuce; Ohio, tomato; and Connecticut, sweet corn and onion.

The same principles apply to a garden whether large or small. It is well to start out in the spring with radishes. I advise planting the following crops: Vick's Scarlet Globe radish; Tennis Ball lettuce; Round Leaved spinach; Alaska, for early peas, to be followed by the Advancer, Telephone and Stratagem; for beets, Crosby's Egyptian for early, and Edmunds' for late; beans, Wax for string, Dwarf Horticulture for early shell and Worcester Pole for late shell; sweet corn, Corey for early, Stowell's Evergreen for late; cucumbers, White Spine; tomatoes, Atlantic Prize for earliest, Dwarf Champion and Acme for later; squash, in order, Summer Crookneck, Boston Marrow, Bay State, Essex Hybrid, Hubbard; cabbages, Jersey Wakefield and Warren's Stone Mason.

27th February, A. D. 1897.

ESSAY

BY

HENRY K. BAILEY, North Scituate.

Theme:—Plant Beauty.

Plant beauty is of two sorts, beauty of color and beauty of form. In some plants, like the calla, beauty of form predominates; in others, like the peony, beauty of color; in still others, like the gladiolus, the lines of stalk, flower and bud are as noticeably lovely as their colors. Plants conspicuously beautiful for their form should not be gathered together in tight bouquets; each should be enjoyed by itself, or with two or three companions so grouped in a vase or other receptacle that the beautiful lines of each are enhanced by those of the others. Plants of lovely color, on the other hand, are more effective when massed. One snowball is insignificant; a bushel basket full of branches crowded with the balls of creamy white, glowing against the rich green of their foliage, is highly effective. In the arrangement of flowers of beautiful form, we have much to learn from the Japanese.

The *Studio* for October and December, 1896, has suggestive articles, with more suggestive illustrations, of the fine art of flower arrangement as practised by the floral artists of the Sunrise Kingdom. Mr. Conder's book on the subject, to be found in the library of the Horticultural Society, will repay thoughtful study. Even the Japanese prints, now so easily obtainable, are not to be despised by the wide-awake florist.

Form beauty is dependent largely upon contrast, proportion and curvature [this was illustrated by numerous charts and blackboard sketches]; and the grouping of plants or sprays is to be governed by the laws of balance. [Illustrated.] Beautiful color has such qualities

as purity, gradation, depth; and when colored flowers are massed, harmonious relations of the different hues should be secured.

There are five typical color-groups or harmonies. The first may be called a contrasted harmony. All green leaved plants with white flowers are in this group. The second is dominant harmony, produced by combining tints and shades of one color; as, for example, a head of hyacinths or a bunch of double violet asters with no green foliage in sight. This combination of tints and shades, so common in the decorative arts and in dress goods, is rarely found in nature, and is least satisfactory as a harmony. The third is analogous harmony, composed of related hues of color. All green leaved plants with yellow flowers are in this group. A bunch of gladioli tinted with violet-red, crimson, rose, scarlet and salmon forms an analogous harmony of exquisite beauty. The fourth is complementary harmony—a harmony brought about by the juxtaposition of complementary colors. A violet-red camellia seen against its glossy green leaves is a complementary harmony; so also is a bunch of violets, with their rich yellow-green leaves. The fifth is perfected harmony: a color group composed of analogous hues combined with a color complementary to the general effect of all the group. For example, the gladioli forming an analogous harmony, if placed against a background of old ampelopsis leaves of rich bluish-green color, would be greatly enhanced in color effect, and the whole would form a perfected harmony. A bowl full of pansies is in perfected harmony. The analogous group runs through varying hues, from pure yellow in the flower centres to the yellowish-green of the foliage. The complementary to the effect of this group is to be seen in the rich purple of the petals. [Charts, diagrams and bouquets of flowers were used to make this clear. The complementary and analogous colors were illustrated by means of the Bradley color-wheel.]

The American people are becoming more sensitive to beauty every year. The florists who furnish flowers to decorate their homes and halls can do much to elevate public taste. A really beautiful thing is always attractive. What was true for Emerson is true for us all. Speaking of beauty, he said:

> "When first my eyes saw thee
> I found me thy thrall."

It costs no more to make a beautiful bouquet than to make an ugly one, and ultimately he who produces beauty gives the greater pleasure and receives the larger reward.

4th March, A. D. 1897.

ESSAY

BY

MARY E. CUTLER, HOLLISTON.

Theme:—Gardening for Women.

TEN years ago such a subject would have been presumptuous. One field only was believed to be opened to woman. If she could not find sufficient occupation for herself in the house she was deemed either a poor housewife, or, if her housekeeping was beyond reproach, unduly ambitious. Many women acted as school teachers. But this was scarcely an exception to the rule, as the teacher simply intensifies and extends the activity of the mother. Under pressure of hard necessity women and girls worked in shops and factories, but they were regarded as unfortunates by the greater part of the community. On the one hand, their employers did not feel compelled to give them wages equal to those earned by men. On the other, many of their early companions considered themselves justified in cutting the acquaintance. A woman farmer! Preposterous! The only idea conveyed by the words was that of the German peasant woman, clad in gaudy clothing, wearing heavy wooden shoes, and submissively following her lord and master through the ploughed field—in extreme cases assisting the donkey to drag the plough.

What at the end of ten years? The most potent fact is that woman has entered almost every field of industry. If you demand the reason I must answer that there are several. Chiefly the fact, that in America, there is always a tendency to utilize waste energy. Among secondary causes may be enumerated these: The ever felt need of delicacy and tact in religious and medical work has produced the deaconess in the one department, and the woman nurse and physician in the other. The need of manual training teachers has drawn women to study wood and metal working with pedagogic ends in

view. But the knowledge of a trade is in itself a temptation to practice it. Accordingly we find woman carpenters, smiths, etc. In the large cities the Woman's Exchanges have made it possible for women to dispose of art products to profitable advantage. The most prolific cause of all, however, is the introduction of stenography. The stenographer inevitably tends to become the private secretary, and, in many cases, the confidential adviser. For men it early proved a stepping-stone to all forms of business advancement. Why should not the same be true in regard to women? No satisfactory negative reason can be found, and so women have entered all departments of industry. Ten years ago my task would have been a revolutionary one. Today the revolution has been accomplished. Instead of pleading for a new principle I am simply to indicate how one more application can be made of a principle already established. I am here today to extend to Horticulture and Floriculture the methods already employed in many other fields of industry. I have classified this subject, and first is, Possibilities for all Women.

What many have done and all can do. It is not my aim nor purpose to discourage or cause any of the thousands of women in this country who are engaged in other vocations to be dissatisfied with their lot, but it is to show those who are endeavoring to solve the question of self-support, that the occupation of gardening is a profitable one, provided it be carried on with steady, personal application, without which there is success in nothing. I wish also to show that there are possibilities and success beyond a life spent in government buildings, behind the store counters in our vast cities, in schoolhouses, in factories and workshops. The farm and garden feeds you all. No wonder you sigh for the green fields, the fresh fruits, vegetables and flowers, horses and carriages to ride over the country with, a home of contentment and rest. Look at the vast army of women that find employment in our cities, who toil from morn to night, tired and dragged from day in to day out; they will tell you they like it, there is excitement in it, better pay, more privileges, etc. On the other hand it costs more to live in cities, air is often poor, if more is earned less is saved, and what have you to show for your earnings when you are along in years and care to work no more.

On the other side, the woman gardener, with a small beginning, has been making a pleasant and valuable home, it has gained in value year by year, her money gained is invested in something that she owns and will for a lifetime. One essential to success in gardening is a love for it; but given this, and intelligence to first plan carefully

and afterward carry out plans with perseverance, and gardening will be found a successful, pleasant and congenial occupation for women. Women are beginning to think about these things. Many of them could do much better at agriculture than to work for the very low wages paid for woman's work in the cities. Don't think I would have you do any field work. It is not so much labor and muscle nowadays as brains and machinery. Don't do your work first and thinking afterwards, but think and plan first and then work. Here is an illustration of what has been done: Miss Sarah Hewitt, daughter of Abram S. Hewitt, ex-mayor of New York City, is an expert in many of the practical details of caring for a horse, such as shoeing, of which most women know scarcely anything. Her trim figure, as she sits on her horse with ease and full control of the animal, is familiar to every one in the neighborhood of her father's great farm at Ringwood, N. J. It is not only in riding that Miss Hewitt proves herself to be an advanced woman in the best sense, that of being able to make herself really useful. She superintends all the workmen, about 25, on her father's estate. The farm covers 2,000 acres and is all in a high state of cultivation, save that reserved for park-like grounds. Miss Hewitt believes in farming in a business-like way, and she knows exactly what she has a right to expect from each employé on the place. She is a strict disciplinarian, but there is not a man who would not go through fire and water for her. She understands horses from their noses to their heels. It is no figure of speech that she knows their heels, for she can shoe a horse as well as any farrier in the State. It is a sight that has been enjoyed by her friends more than once, that of this dainty young woman hammering a refractory shoe into shape on an anvil and afterward measuring it to the foot of her favorite mare. She is too fond of horses to place a hot shoe against a hoof and she insists that the shoe shall always be cooled thoroughly before it is applied. She is quick in her movements, and there are blacksmiths in the neighborhood who freely admit that she can shoe a horse in less time than they can do it well. She does that as she does everything, on scientific principles. It is a well known fact that horses have as many different traits of temper and disposition as human beings. Miss Hewitt seems to understand a horse intuitively, and it is said that she never failed to conquer any horse that she ever took in hand, and that, too, without any means save those of kindness.

The question is often asked me: What can woman do (or what can I do) to gain a living by flowers, fruits or vegetables? Did you ever

visit the Agricultural Department at Washington in the spring of the year and look upon the several hundred women employed by the Government putting up and labelling the seeds that are distributed by the Congressmen? Note the advance in women's employment. Prior to the war no women were employed in any of these departments, nothing but male clerks. United States Treasurer Spinner, who signed the greenbacks first issued, was the first government officer to ever hire women in any of the departments. Now many thousands are employed in every department, and they make (of course) most efficient clerks.

"What many have done, and all can do." In many of the towns in this State, and I presume other States, in the summer months during the flower season, a flower committee is formed, meeting every Friday afternoon (generally at the depots), there they receive flowers donated by loyal women. They are packed, forwarded free by the railroad companies, and distributed among the sick in various hospitals of Boston and other cities. They are placed on small tables by their bedsides and, better yet, the patients love to hold them in their hands and doubtless do so as long as their fragrance lasts. Many say, my lot in life is an humble one, I can do but little. Two ladies visited the Cathedral of Cologne, they were admiring its beautiful architecture when they overheard two men in the humble garb of workmen say one to the other, "Didn't we do a splendid piece of work?" One of the ladies said, "Pray what did you do?" "What did I do?" said the workman, "I mixed mortar for two years over across the street." Now if your lot is an humble one, if you cannot do anything else, mix mortar, carry or send flowers to the sick and helpless. Stand in your lot and by and by you will hear the great Captain say, "Well done."

An industry which is on the increase for the employment of women is classified as small fruits. Home consumption has increased to such an extent that many acres are raised to satisfy the demand, and in the season many women are employed in picking strawberries, currants, raspberries and blackberries, they also are competent to pack and ship, and in many cases supply the local trade. In the fall of the year the canning factories give employment to many women. There are many near my home and it is interesting to watch the process of preserving the various kinds of fruits and vegetables; first comes asparagus, string beans, Bartlett pears, sweet corn, tomatoes, squash, apples, etc. This gives work to the old and young. The packing of fruit is another source of income to women. At the South

the oranges and lemons are papered and wrapped by women; they are wanted in the grape regions, particularly in New York State and California, to pick in the vineyards and pack the fruit in boxes which are sent nearly all over the world. Who can do this so well or better than women? The march of improvement is onward and every day brings something new.

Second. Possibilities for many women. What some have done and many can do. One must have a love for gardening to make it a success, it must be born in them. In my neighborhood I know of a woman who gets a good living for herself and family by the cultivation of gladiolus, she has a large garden of the choicest varieties and colors, sending them to Boston for sale in their season. She also sells the bulbs. Miss Black of Harrisburg, Penn., a young lady of taste and refinement, and an amateur florist, had the finest display of gladiolus last year ever seen (it is said), numbering some 140 varieties. Another woman in a near by town who has two large greenhouses full of English violets, picks every other day for the Boston market. This glass farming is getting to be quite fashionable, and it is something women can engage in easily. As an instance of what women have successfully accomplished in horticulture in another part of the country, is Somerset Park, a woman's health and pleasure resort in the Rocky Mountains, of which many of you doubtless know. This most beautiful of the Rocky Mountain Parks, lying between Denver and Colorado Springs, and named after that noble English woman, Lady Henry Somerset, is owned and managed by women; and the president of the resort and association, Mrs. Olive Wright, is by her shrewd management fast making it a famous resort for health and pleasure seekers. The climate is delightful, wild flowers are in great profusion and have become famous the world over for their beauty and variety. Near by are cultivated peach orchards, vineyards, strawberry fields and all kinds of small fruits, which find a ready market in Denver. All these are managed by women. I wish I could half express my earnestness in trying to persuade the thousands of women in these United States, a country rich in nature, soil adapted to everything in its different locations, free country, fresh air, which insures good health and long life, to more engage in this noble work of tilling the soil, thereby causing two blades of grass to grow where only one grew before.

Last August I spent a few days in Newport, R. I. I never saw flowers in such profusion there as the past year, the grounds were full of plants and shrubs in full bloom. I naturally looked in the

flower stores and found in one a woman sole proprietor and manager; said she had more than her share of the trade; she owned her greenhouses just outside the city limits. A large seed store in Springfield, Ohio, is owned and managed by a Mrs. Haynes, who is doing a successful business. Many women the past few years have engaged in glass farming; greenhouses and hot-beds have many attractions. The improved ways of heating, ventilating and watering have reduced labor as well as lightened it.

The paying crops, just now, I think to raise are carnations, lettuce and cucumbers. I love to see things grow and help them grow. I love to work and never believed that work was a curse to any person. The great curse is laziness and shiftlessness. There is no better place to see the work of women gardening than at our Agricultural Fairs and Grange Harvest Festivals. It is often the case that the women take more interest than the men, and largely the exhibits are productions of the women. This was shown at the Middlesex South Agricultural Fair last fall, when the Patrons of Framingham and Sherborn Granges competed for the prizes, each table extending across the hall. The women arranged the exhibits and I know they had a hand in producing them; fruit and vegetables as well as fancy work. It was a good idea conceived by the Massachusetts Horticultural Society of Boston in offering prizes to the scholars for school gardens, school herbariums and children's herbariums. The cultivation and observation of plants in school grounds and instruction upon them being of high educational value. Native wild plants, such as ferns, grasses, asters, golden-rods, violets, native shrubs; and economic plants, such as grains, vegetable roots and leguminous plants; must be the stock of the gardens. Why is it that so many women of taste, who love to adorn their persons with flowers and to decorate their rooms with floral designs or collections of flowering plants, have so little desire to enhance by the same means the beauty of the external view which those rooms command and to add similar attractions to the outside of their dwellings! It must be from the prevalent, yet mistaken idea, that gardening is too hard work for them. For those who can claim brothers, husbands or fathers, who possessing the taste and having the leisure for horticulture exemplify it, or those who can afford to pay for the making and care of a garden, are always quick to perceive its advantages and to enjoy them to the utmost. But there are many household occupations which women are expected to perform, and which they do perform without injury or complaint, that are much more wearisome and more difficult to

accomplish than gardening. Gardening is earnest work, it will not do to poke here and push there, and putter around anyhow and anywhere, there must be thorough and well directed effort.

The legend of the Cherokee Rose is as pretty as the flower itself. An Indian chief of the Seminole tribe, taken prisoner of war by his enemies, the Cherokees, and doomed to torture, fell so seriously ill that it became necessary to wait for his restoration to health before committing him to the fire; and as he lay prostrated by disease in the cabin of the Cherokee warrior, the daughter of the latter, a young dark-faced maid, was his nurse. She fell in love with the young chieftain and, wishing him to save his life, urged him to escape; but he would not do so unless she would flee with him. She consented. Yet before she had gone far, impelled by soft regret at leaving her home, she asked leave of her lover to return for the purpose of bearing away some memento of it. So, retracing her footsteps, she broke a sprig of the white rose which was climbing up the poles of her father's tent, and preserving it during her flight through the wilderness, planted it by the door of her new home among the Seminoles. And from that day this beautiful flower has always been known, between the capes of Florida, and throughout the Southern States, by the name of the Cherokee Rose.

It is of rapid growth, and soon forms a hedge as dense as it is beautiful. It runs along the roadsides, likewise, converting roads and fences into thick banks of leaves and flowers. It climbs to the tops of high trees, hanging its festoons among the branches, or letting them droop gracefully to the ground. In fact, this showy wild-flower, with its five white petals and centre of gold, imbedded as it is in so many brightly shining leaves of green, gives almost a bridal aspect to the spring landscape, and well-nigh makes all the citizens' cottages look like homes of the poets. Napoleon, when at St. Helena, formed himself a garden; it was square, and of about an acre in extent. "Here," writes one who saw him in this inclosure, "in a flowered dressing-gown, green slippers, and his head bound round with a crimson silk-handkerchief, may be found the once mighty emperor, wielding a watering-pot, and working in the soil." It was a very kitchen garden, in the most homely sense of the word; and the genius that produced such transcendent effects upon the plains of Austerlitz and Marengo, seems to have served him but little in his encounters with earth and stone.

Better would it be if every cottage in the land had its garden plot, and its "square" of good vegetables and good fruit. It is the same

with good gardening as with a good sermon, it will bring out a thousand good things from the same old text.

Third. Possibilities for certain women. What a few have done, and more could do. If I had not been entirely successful for the past twelve years, in both the floral and vegetable departments of horticulture, I could not have accepted this invitation to speak on this broad subject, which has been occupying the minds of many thoughtful men and women, all over the land, during the past few years. This is somewhat due to the recent depression of business in mercantile and professional life, which has caused much uneasiness and dissatisfaction, and turned many minds toward the subject of tilling the soil.

You may wonder why I, a woman, should be engaged in this occupation. For my own part I was forced into the business by circumstances; but I have never regretted for a moment having entered it.

A time came twelve years ago when it was a matter of selling my pleasant home, or leaving the school I was teaching and taking care of it myself. I could not bear the idea of seeing the place go into other hands; and so in spite of discouragement of friends, I determined to try and manage it.

My farm of sixty-eight acres is located in Holliston, Mass., on the Boston & Albany Railroad, half way between Boston and Worcester, well situated for market gardening.

The land slopes gently to the southeast and northwest, so that I can get two crops of early vegetables on the southeast slope, and peach orchards, and later crops on the northwest. On first assuming direction, I decided to go carefully the first year. The spring proved late, the summer dry, a full crop of peaches, and a late fall, all of which was in my favor, considering my soil and location. We soon found that we did not raise vegetables enough to half supply our demand, and the following year we raised more than ever, and have steadily increased the size of the various crops ever since. At this time my carnation house is receiving my attention, the forcing house is well under way, and will supply some eight thousand feet of hotbed sash with tomatoes, cabbage, lettuce, peppers, radishes and pansies. I am much in favor of the cultivation of peaches. I believe there is money in them. Large peach orchards can be seen on the northwest slope of my farm, and among the younger trees small fruits can be seen growing. I believe the first crop pays one for the outlay, cost of trees, and labor in setting, and the second crop and all after is clear gain. The kinds I have been most successful in growing

(and I have tried nearly all), are the Mt. Rose, Stump the World, early and late Crawford, Oldmixon and Crosby. Many kinds have been "called" but "few chosen," for this soil and climate. The peach is one of our finest fruits, when well cared for; but of late it is uncertain, and does not seem so hardy. It is a native of Asia and China, where the climate is much less severe than ours. The favorite soil is a light sandy loam. To insure a peach crop in New England every year, some method must be devised to protect the fruit-buds from winter-killing. Generally they are destroyed if the temperature falls lower than 15 degrees below zero and remains a considerable time at that point. In the fall of 1885 many of the buds were destroyed when the temperature had not fallen below 18 degrees above zero. In 1886 many buds were destroyed before Dec. 1. A disease known as the Yellows is a serious hindrance to peach culture. I believe there is no permanent cure for it, at least the cure is not worth the pay; the best doctor is the axe. I believe it is contagious, spreading to other trees. The first indication of the Yellows we notice is, that the fruit is small, and ripens prematurely, and instead of the color being shaded very evenly, we find it in spots, too high colored. The leaves turn yellow very early in the season. Another pest is the borer. Hale Brothers' famous remedy for the peach borer is thus prepared: In 100 gallons of water dissolve 25 pounds of common potash, add 1 gallon of crude carbolic acid, and lime enough to mix to the consistency of thick whitewash. To be applied in April and May. I know that the peach culture is not all smooth sailing; but the reason why I am interested in the subject, is because I raise the fruit, and sell it at a profit. You will excuse me if under this head, "Possibilities for Certain Women, What a few have done and more could do," I am somewhat personal.

We hear and read a great deal about over-production, and under-consumption. There is no such thing today as over-production in Massachusetts. A first-class No. 1 article always sells. I thought a few years ago when I first launched out in the market gardening business, that there might be such a thing; but I doubled my business, and did all the better. There was a time when we thought we could not raise lettuce for less than a dollar per dozen; now I should be very glad to get fifty cents. There was a time when we could not grow it (or thought we could not) in hot-houses, but were obliged to grow it in hot-beds outside.

This has all been done away with.

One swallow does not make a summer, nor one collapse in apple or

grape prices render profitless our orchards and vineyards. I do not think the extreme low price of either Apples or Grapes can be wholly chargeable either to over-production or poor quality. The truth is, we shall have low prices till we have more money.

Study your business, understand the land that you cultivate, get all the information you can in relation to the business that you are carrying on, and make a specialty of some few articles, because any one of the articles that you might produce will give you a living.

I am carrying on at this present time five distinct branches, and any one of them will give me a good living at any time. We of today have a better chance than they did ten or twenty years ago, even in farming. We have opportunities today for acquiring knowledge at the Agricultural Colleges and Experimental Stations; we have the land which is at our disposal; we have the markets, which you all know are the best in the world. There is no such market in this country, or in any other country, as the Boston market; and there are no such vegetables or produce of any kind in such good shape as shown in the Boston markets. When I am in a large city I make it a practice, some pleasant mornings, to go down to the markets and learn what I can about the handling and sale of farm produce.

I was in New York in the midst of the Asparagus season. There was a great quantity of it coming into market; most of it came in boxes of white pine, but they were old, they had come and gone, back and forth, time and time again. It was very nice, fine Asparagus, tied up in the usual way, but it sold at that time for six cents a pound. There was another lot came in on the same boat, in white, clean boxes made of very thin wood, cheaper boxes than the others, and the Asparagus was of the same quality, to all appearances, but it was tied up with nice, pink tape, which does not cost five cents a mile. It looked very attractive, and it sold for ten cents a pound.

I have seen Kalamazoo Celery sold in the market (and they grow very nice Celery out there), tied up with blue tape, a third of an inch wide, tied at the bottom and also about half-way up to the top. This blue tape on the white Celery made the bunches look very attractive, and everybody wanted it. It sold for a good deal less money than my friend Mr. W. W. Rawson gets for his Celery, but when Kalamazoo Celery was selling for 18, 20 and 25 cents per dozen, done up in the ordinary style, this gentleman's Celery, tied with blue tape, was bringing 35 cents a dozen, an increase of 40 per cent. I think it is a good plan occasionally to visit the markets, study prices, compare varieties, and learn how to better your crops and

pack for market; you are really working as hard as if you were in the field.

Not long since, an electric car on the West End road in Boston came to a sudden stop. The motorman looked at the conductor, and the conductor looked back at the motorman; they looked up at the trolley wire and found that all right; they took up the trap and found the fuse right; very soon an operator came along and found the trouble. "Why, Billy," said he, "there is a *dead rail*, and all the dynamos on the West End road would not start this car, nor any car we own." Now we have all got to get over that dead rail, wake up, do something, and do it well.

There is a great deal said and written about Abandoned Farms; the farms are not to blame, it is the people who run them. I have travelled through the Eastern and Middle States thoroughly, and have yet to find the land that would not produce something. I believe that all land can and should be made productive, and have no faith in the necessity of Abandoned Farms, when there is a willingness to work. Where my gardens are today once was rocky land covered with huckleberry bushes. Now a mowing machine can run over any part of it, and bicycles through the driveways; and the result has been accomplished by nothing more than energy and perseverance. It is perseverance that has rewarded every woman in this Commonwealth with what measure of success she has attained. It was perseverance that carried the hero of Appomattox to victory. It is perseverance that carries ten per cent. of those who are successful in business life in triumph over the ninety per cent. who go down. Many and many a person has failed on the very threshold of success for the lack of it.

I am not here today to speak for organization; but I should be false to every consideration, false to my obligations, if I failed to call attention to the grand work which the Patrons of Husbandry are doing in this State and every one of the United States, and to the assistance it has been to farmers in helping solve this great problem. Wherever the grange has established its home and lifted its halls, as it has all over the State, it has not only offered the opportunity, but, by the faithful labors of the Patrons, it is securing substantial results. You have your Horticultural Societies, your Market Gardeners' Association, Farmers' Clubs and other organizations; but I tell you, farmers of Worcester, that to-day more can be gained in the search for success in Horticulture or Agriculture through the door of the earnest, working Grange, backed as it is by the boards of Agriculture, than by any other organization in existence.

What wonderful progress has been made in these latter years in Agriculture, in Horticulture, in Floriculture, in Literature, in Science, in Art, especially in Medical Science (which goes to prolong human life)! What comforts and luxuries are enjoyed today by the humblest people, that were unknown to the wealthy a few decades ago! Upon a recent visit to Washington, in going from my hotel to the capitol, I passed by the statue of Benjamin Franklin, on Pennsylvania Avenue. I looked up in the face of what seemed to be a kindly, benevolent old man, and said to myself: Could the stone heart beat, could the marble lips move, could the tongue speak, what would he say to his countrymen now? What would he say to this capital city of the nation? What would he say to the electric light, the telephone? What would he say to the electric cars, the phonograph, the Atlantic cable, the flying colonial express which runs from Washington to Boston in twelve hours? (It took two weeks for the news of the Declaration of Independence to reach Boston from Philadelphia by the swiftest transportation then known.) What would he say to the army of employés in the United States Post-Office Department? (He was George Washington's Postmaster-General and a member of his Cabinet, and he kept all the accounts of the Department himself, and did not have a clerk.) What would he say if he could see plants growing by electricity in the night? What would he say to the improvement in printing, which was his profession; to the sun pictures or photographs, now printed by the million in the cheapest papers? Think of the cheapness of literature, of the public libraries, and the educational facilities that are within reach of the poorest and humblest of our people. But these privileges bring with them added responsibilities for the way in which we use these blessings.

If I can get a good living, and something more, in sterile New England, and the soil of my farm is no better than that of thousands of others in Massachusetts, is it not an inducement and encouragement for those who live in the more fertile soil from the Potomac to the Rio Grande and from the Golden Gate to the Hudson, to engage in this same honorable occupation.

On the morning of a memorable battle Napoleon Bonaparte pointed his gleaming sword toward the morning sun, and said to the officers that stood about him, "Behold! Behold! the sun of victory!" May the same sun of victory shine on all connected with the Worcester County Horticultural Society, and upon all engaged in Horticulture and Agriculture, and may they be characterized far and wide for their harmony, contentment and prosperity!

11th March, A. D. 1897.

The following essay was read before the Society in connection with the Massachusetts Fruit Growers Association, at their Annual Meeting:

ESSAY

BY

A. G. SHARP, RICHMOND, MASS.

Theme:—Small Fruit Culture.

I WAS a little surprised to be called here by your President to give you a talk, or read a paper, on small fruit culture, as I doubt not there are men here, who have had more experience than I in this line, though not probably under the same conditions of soil, etc. I can always learn something from any man who has been a cultivator of any small fruit. My soil is a heavy clay loam that heaves badly with the frost, fall and spring, so much so that I have seen clover roots of more than a foot in length thrown entirely out of the ground. Therefore I have to pursue a different system from one on a sandy soil. I am not going to give you any theories, but what I have learned or observed in actual practice during my seventeen years' work among the berries. If we were all growing fruits under the same condition of soil and markets, less would be gained in attending these meetings. It is of our varied experience that it becomes so profitable to meet and compare notes, in fact this is now a necessity; and the question is not can we afford to attend them, but can we afford to miss them? The days of guess-work have gone by for the successful farmer or fruit grower. The best dairymen have their scientific tests, by which they weed out their unprofitable cows, study the food analyses and learn which are the most economical and most profitable feeds to use for both milk and butter, also mamivial value of different grains used, hold their winter meetings and discuss their problems, striving to get nearer the consumer or lessen the expense along the line and at the other end, knowing that one cent. per

quart saved sometimes means the difference between a profit and a loss in the business. Prices of the small fruits have been on the decline for years, many thousand quarts have been sold the past year for less than the cost of picking and marketing; and there is no certain prospect of a return to much higher prices in the near future. Fruits may not have fallen more than other farm produce, but nine-tenths of the drop in prices falls on the grower; for labor, picking, express or freight rates, etc., have not fallen in proportion, and the commission merchant still lives under the old dispensation, taking his one-tenth per cent. as rightful share. Therefore it behooves us to make a desperate effort to reduce cost of production and marketing. Anyone who now begins the culture of small fruits without a careful study of these problems will be pretty sure to graduate in the primary department, and two or three courses will convince him that something beside muscle and fertilizer is required for success. I cannot tell you just how to clear $1,000 per acre on strawberries, or any other big stories; it is not necessary, for there are plenty now in print. When I began I saw several that I remembered, for small stories or failures reach the printers. But I do not condemn all the catalogues, as some contain a good deal of good instruction; if they do strongly recommend potash, it is not all lye they contain. Fruit growers are the most unselfish men you can find as a rule, the most willing to give instruction and the least afraid of honest competition. Perhaps the best I can do is to state how I raised my last crop of strawberries. Three years ago I purchased three acres of land; having been ten years in grass it was well run out, except spots that had well run into quack grass; it had received the manure from one cow, applied in little garden spots each year till quack grass got so thick another piece was used, etc. I bought ten cords of manure delivered on the lot (for $40.00); this was evenly spread over three acres and the piece planted to corn, potatoes and roots, mostly potatoes, where strawberries were to be, using potato fertilizer in the drills. One-fourth acre was so matted with quack roots that I did not plant it, but cultivated once a week till August first and sowed to flat turnips. I dug three hundred bushels of potatoes from one-fourth acre; the crop no doubt doubled by the quack grass, as I had to cultivate and hoe them twice before the potatoes showed above ground, and cultivate once a week until they were a foot high. I dug them the middle of August and sowed the piece to barley, and gave the quack grass a little more punishment after death, and kept the soil covered during the winter, and the barley roots decaying kept it in good mechanical condition to

receive the strawberry plants in the spring. I never allowed ground to lay bare during the winter, but shall use rye instead of barley in the future, sow thick, and plough under at eighteen inches growth (as I have since found it better, to hold the moisture). I ploughed the early ground, as it would crumble nicely; harrowed it fine, and sat one and eleven-sixteenths acres, May 10 to 17, using my own plants, grown near by. Placing boxes on a stone-boat I dug the plants in clumps, leaving the dirt on, drew the piece and set them without using any water. Ninety-nine plants out of every hundred grew and scarcely a plant wilted the second day. The rows were three and one-half feet, plants about fifteen inches apart, a hundred and five rows of twelve rods length, nine varieties, but principally Lovitt, Bubach and Parker Earle.

30 Lovitt.	10 Greenville.	4 Timbrell.
21 Bubach.	8 Haviland.	3 Eureka.
20 Parker Earle.	5 Mammoth Beauty.	

Not any farm manure used, set by line and raked in twenty-five pounds Stockbridge fruit manure on each row as set. May 22 and 25, raked the entire piece with common garden rake and again ten days later; then cultivated with horse every ten days after until September, narrowing cultivator, growing wide matted rows. June 8, sowed 800 lbs. cotton-seed meal on the rows; June 26, sowed 2,000 lbs. fine bone on the rows; November 1, sowed 100 bushels ashes on the rows. Ashes were 20 to 25 per cent. lime mixed in, and many soft-wood ashes on the rows. Nov. 5, spread six to seven tons bog hay evenly over the entire surface; and during winter spread a few loads coarse manure on the rows, enough to hold the hay down during March winds. April 22, uncovered the rows, leaving hay in paths; May 2, sowed 100 bushels ashes (20 per cent. lime) on the rows. Picked first crate fruit June 19, and last quart July 30; yield 320 bushels. I sprayed the plants soon as leaves started to grow and again as soon as the first blossoms opened, using eight pounds sulphate copper, eight pounds of lime, and a quarter pound of Paris green to fifty gallons of water. Mulch when ground freezes enough to bear a load of hay and thick enough to hide every leaf. Later put on heavier. No amount of mulch will smother or weaken the plants, if taken as soon as frost comes out. Use hay or coarse manure, put on any time during the winter. I am not afraid of too much foliage, if there is enough potash and phosphoric acid in the soil to balance, or back up the fruit started with nitrogen. I never had a good crop of potatoes without a good show of tops. And in the winter is the only time it

pays to buy stable manure, if at all. I would not take any as a gift if I had to draw it three miles after spring opens, or pay over two or three dollars per cord for the best in winter; and there is as much difference as there is in fruit in value. If a bed is to be kept over I mow tops and rake them into the paths, then using six-tine forks, turn the mulching tops, etc., bottom up, narrowing the rows to a foot wide, clear out the weeds in rows, sow on some first-class commercial fertilizer and cultivate paths fine. Many new plants will fill in or widen the rows and some varieties give just as good crop the second year. For red raspberries, plow deep and fine, and fertilize as for good crop of corn or potatoes. I prefer to set the plants the last of October, in hills, at least five by five feet, and strong growers five by six feet, two plants in each hill, and put an extra large shovelful manure on the top after treading soil firmly about plants, and best to use scoop shovel. Corn and potatoes may be grown one way between the rows the first year, or a row of root or cabbage. If no winter protection is to be given to them, put back new growth when two feet high, to grow stocky canes, leave four to five in a hill; but if to be laid down, let them grow high and slender and allow eight to ten to remain in a hill. Lay them down soon after Nov. 1st and cover with earth from being broken by snowdrifts and drying winds, and the canes will come out in the spring, fresh and plump, not fated and shrivelled, as when exposed to the winds and changes of temperature.

Using the soil between the rows for covering, forms a trench to carry surplus water away from the hills, also leaves ground in shape to be worked much earlier in spring. Cultivate ground early as possible, making surface mellow and fine, to check evaporation and preserve the moisture stored in the soil. A good dust blanket is pretty good irrigation. Cultivate as often as necessary to keep dust on the surface, cut stakes six feet long and tie canes evenly about them, not all on one side. If chestnut stakes are used, by resharpening, they will last as long as raspberries are profitable. Take up canes as early as frost will permit, and cut them back to about five feet high. A dressing of fine ground bone and wood ashes or muriate of potash, once in two years is sufficient. Just how much to use the growth of plant and color of foliage will best tell you; this will give you the best quality of fruit in firmness, color, size, and flavor. If more nitrogen is needed, apply 200 to 300 pounds nitrate soda per acre when foliage is perfectly dry, and be careful not to hit leaves. If you can get cheap mulching, spread enough between the rows to shade ground. About middle of June, you may save enough clean fruit

from lower branches to pay for the mulch; it is broken up by pickers tramping, and worked into soil in fall when covering the canes, supplying vegetable matter to take place of farm manure, if any is needed in the soil. When a piece has nearly run out, apply good dressing of best fertilizer you can buy, early in spring as possible, and treat all new growth as weeds that season. In this way I have grown a good farewell crop. The Black Raspberries will not winter with me without protection, so I have given them up. I tried Doolittle, Gregg, Ada, Carman, Ohio, Earhart, etc. Have had of Red Turner, Shaffer, Marlboro, Hamsell, and others, but found none equal to Cuthbert, both red and yellow; berries are large, fine, and good flavor. I have picked them Saturday morning, kept them over to Monday and shipped them 160 miles, and they arrived in condition to sell for sixteen cents per quart, wholesale, past season. But this could not be done, raised in hedge-rows and on farm manure, or with irrigation. Yellow or white fruit can be sold in small quantities only, and requires great care in picking and handling—about one to five or six of the reds. There is no fruit that will pay better for neat and honest packing than strawberries and raspberries, and it is for our interest that every grower ship his fruit to market in best possible shape. When market is full of soft dirty fruit, the very best sells slow, at low prices. The business man is asked why he did not send home some berries for tea; he replies: "Berries were poor and soft to-day." "But were there no nice ones?" and he replies: "Well, yes; but I saw so much trash it took away my appetite for the best," etc. Fruit should run uniform, through the basket, and through the season. A gentleman from a neighboring city while purchasing some strawberries from a dealer in Pittsfield, said to the dealer, those are fine berries, I can occasionally get as nice at home, but am not always sure of them; the dealer replied that he had not received a crate of soft or dirty fruit from that grower for ten years, and he could guarantee just such the season through; thereupon the gentleman ordered six boxes sent him by express three times a week for a whole season (eighteen quart-boxes a week). Passing through Boston markets I noticed some neatly put up fruit, at one of the best stands in New Faneuil Hall market; I said to the dealer: "There must be money in that fruit for you;" he smiled, and replied: "Well it is fine fruit and nicely put up. I always give it the preference, for I can depend on it; if grower telegraphs a shipment made, I sometimes sell it all before it reaches me. There is not so very much money in it for me, but I like to see it in front of my store. I consider it an

honor to any man in Boston to handle those goods." Another grower, seven miles out of Boston, having to drive four miles over the pavements, a Mr. Worth of Melrose, fitted a spring bed in bottom of his wagon, delivered his strawberries to another dealer, fresh daily, boxes full, and received eighteen cents per quart for his entire crop, a few thousand quarts. Many berries leaving field in good condition are nearly ruined in transportation, by being thrown into car door at an angle of forty-five degrees, and get a drop of a foot or less, every time the crate is moved. Always cool fruit well before shipping, keep soft berries at home to sell nearby, or make them into jam, or syrups for the soda fountains, or fruit vinegars.

Blackberries will thrive on light soil, and with much less fertilizer than the raspberries require. And yet to do their best they require just as good cultivation, and more moisture to carry out the crop. Some seasons they have been the most profitable for me of any small fruit; while at other times they have come into competition with southern peaches and the wild berries from the mountains, cutting the price. We cannot compete with New Jersey to get good prices early; but many Jersey growers lost money the past season. One of them told me that he sold from a half acre just 1200 quarts nice Wilson, receiving from dealer after freight and commission was paid $18.60, which was only sixty cents more than the cost of picking them. Some growers there, having forty and fifty acres each, several carloads are shipped daily from some railroad stations; same grower received only five cents a quart for raspberries. He gave up the business, and has hired as foreman for a corn grower. I set them in the fall, or soon as frost is out in the spring, and give them same room as strong-growing raspberries, at least six by five feet and cultivate both ways, tie canes to stakes in fall, after cutting out the old wood that bore fruit. I do all work possible in fall, when there is more time to do it. Allow five or six canes in the hill; when tied close about a stake the fruit is all on outside of the hills, and no reaching in among the thorns for it, nor scratching your hide off when cultivating. I have tested Kittatinny, Snyder, Erie, Stone's Hardy, Wachusett, Agawam, etc., and have torn out all but the Agawam. It is as hardy as any, good size, jet black and excellent flavor, productive, and a good shipper; and with me has sold for three cents per quart more than any other variety I have found. And while customers would tire of other varieties in a couple of weeks, they call for Agawam as long as I can supply them. I have tried mulching, and think it pays to practice it, though thorough surface cultiva-

tion, if begun early as possible, is usually sufficient to carry the crop through on my soil. Thus we save much of the moisture stored during the winter, which is needed to work on the fertilizers used, and make the soup for the plants to take up in their growth; working the soil creates it, and raises the temperature; this also aids decomposition or hastens it, making plant and food available. Nearby or home markets are usually best, as our Saturday fruit, and that sometimes picked too damp to carry well, can be disposed of to better advantage; this helps the average, and we are able to do better than those on cheap lands with the cheap Italian labor in Jersey and Delaware. We are told there are 1000 known fruit insects; some of these attack the blackberry, also come rust, leaf-blight, and nutgall on the roots, etc. Agawam is not as subject to cane rust as Snyder and some others. May 1st I sprayed the canes with Bordeaux, made same as for strawberries, and again as they began to blossom. I think it was a benefit, as I saw no cane rust this season, and the foliage was much better than years previous. We must have good foliage on blackberries to obtain juicy and good flavored fruit of largest size.

There is a growing demand for gooseberries, but the fruit is mostly sold green. It grows very slowly. I treat them same as currants and get about same price per quart, wholesale. I prefer Red Jacket to any variety I have tried, as it is large showy fruit and productive, a more stocky grower than Smith's Improved, or Downing, here, and does not mildew.

Some of us can look back over the years and see the row of old currant bushes, as they grew beside the garden wall, and remember the well-browned turnovers, or larger pies, made by our grandmothers from their half-grown fruit, sometimes mixing them with the home dried apples that had been strung and dried around the kitchen the previous winter. Also how, later in the season, as we came from the hayfield with scythe on our shoulder, dry and hot, we would reach over the wall or through the fence and rake off some of the well-ripened fruit to quench our thirst and sharpen the appetite for dinner.

Those bushes always bore a good crop of small rich fruit of good flavor. They received no trimming, and scarcely any fertilizer or cultivation, except that given them by the chickens that gathered under their shade to scratch and wallow during the heat of the day.

This was before the chipper of the currant worm was so destructive. Few currants were then sold in the smaller cities and towns compared to the present. An old fruit-grower laughed at me for setting one-half acre fifteen years ago, and said I would be sour enough trying to sell

so many. But I think their use will continue to increase as people learn more ways of putting them up and mixing them with other fruits, sometimes using them in place of cranberries when price is lower. A quart of currants makes a fine sauce, and not expensive at recent prices; and the best is made without heating, quite a consideration in hot weather; heating acid fruits changes greatly the flavor, as seen in the strawberry.

I have a sample to show, for testing it; if you are not afraid of germs, just try it.

Currants thrive best in a heavy, deep, moist soil; and in bearing will stand it and pay for it to be well fertilized. But it will not do to give deep cultivation; disturbing the roots in spring causes many of the berries to drop from the stems, thus early shedding perhaps one-half the fruit.

Early in spring as possible plough directly in centre between the rows, throwing dirt each side toward the plants; then with hoes or very shallow cultivating, work it back to centre gradually, so as to give as level cultivation as possible.

Either purchase or grow strong two-year plants, and set them late in October; tread earth solid about the roots, and throw a large shovelful of manure on the top—use the scoop-shovel. This could be done after ground is frozen or during winter; it prevents heaving, and early spring rains wash enough into the soil to give them a good start and keep ground cool and moist. Cut back one-third to one-half each year's growth from the start, and cut out most of the sucker growth around the roots; in this way trimming is simple, you keep your bush compact and it grows stocky, with plenty of foliage to protect the fruit from late spring frosts and sun-scald, thus giving you a longer season to market the fruit in good order, bright and plump.

Currants grown this way will make good jell later in August, and we have picked them for table use in October from Victoria. Set them not less than 5–5 ft. Strong growers require nearer 6–6 if to be cultivated both ways, where the soil is suited to them, should have a good dressing of bone and potash in some form once in two years at least. The largest fruit always sells best, and can be picked at one-half the price of the small varieties. If possible, mulch the entire surface of the ground when berries are half grown, or before fruit weighs the bushes down into the dirt; this keeps fruit clean and increases size.

Spray with hellebore when first worms are found. Hellebore kills by contact as well as by eating it; use a large spoonful to three gallons

of water or, what is better, mix dry with four times the weight of some cheap flour, and thoroughly dust the bushes with it when they are damp with dew, or a recent shower; when put on this way it forms a paste that will last through the season and is safer to use than paris green. The currant-twig girdler appears about June 1st, depositing its eggs about an inch below where girdled; after hatching they work down the stem a few inches and come out. Remedy is to clip the stems two or three inches below where girdled. I tried this a year ago last June, and last season could find scarcely any affected on that piece. This insect is distinct from the stalk-borer, so says W. E. Britton, which works entire length of currant; the only thing to do is to cut out all the affected stalks and burn them at once. Fay's Prolific is most profitable for me, is large and productive, but Victoria is best for my family use. We have considered the requirements of some of the plants, soil, etc. Now, what is required in the grower? The first qualification is a love for the work; he must be one who takes pleasure in watching plant life, must have good patience and a great amount of perseverance and "stick." He must not only be able to give the best, but know how to sell it, when grown; he must be able to get the most out of hired help and have tact to get along with his dealers, not showing a disposition to want the big spoon every time, as there should always be a friendly feeling between grower and dealer, or perfect confidence; he must be honest and industrious the year around. Now, he who has these qualifications will succeed in most any business, and make money easier and faster than in raising small fruits, if that is his only object. But to one who enjoys the business and is well located, not having too large a farm, who is near markets or near a good shipping-point, there is much pleasure, and some seasons good profits. One can feel more independent and get more enjoyment out of life than when working for a salary or shut up in city away from nature and country life. Plenty of fruit and fresh air are worth something. Dollars and cents are not all there is in life that we should bend all our energies in that direction.

ANNUAL REUNION AND SOCIAL GATHERING.

MARCH 10, 1897.

The members and invited guests held an informal reception in the library and ladies' parlor from six until seven P. M. The company then marched to the banquet hall, Bicknell's orchestra playing a march. After prayer by Rev. M. H. Harris, an excellent menu was served by Curtis S. Yeaw.

At the head table were Col. H. W. Wilson, of Boston, member of the Massachusetts Horticultural Society, Hon. Aaron Lowe, of Hingham, E. W. Wood, of Newton, Member State Board of Agriculture, Edwin Hoyt, of New Canaan, Conn., Vice-President Conn. Pomological Society, Hon. C. W. Smith of Providence, R. I., Secretary R. I. Horticultural Society, Mayor and Mrs. A. B. R. Sprague, Hon. Stephen Salisbury, Hon. Henry A. Marsh, Mr. and Mrs. W. H. Sawyer, Mr. and Mrs. E. I. Comins, Rev. M. H. Harris, Lieut. Samuel Hathaway and H. H. Chamberlin, original members of 1842, Mr. and Mrs. James Draper, President O. B. Hadwen and Hon. Henry L. Parker, Toast-master. After spending an hour enjoying the good things, President Hadwen called the company to order.

ADDRESS BY PRESIDENT HADWEN.

Members of the Worcester County Horticultural Society; Ladies and Gentlemen:—

Again we extend to you, in behalf of the Horticultural Society, a most cordial welcome to this the 55th anniversary, as we come together in social intercourse. We may congratulate ourselves on the harmony of the previous years. I wish to extend our friendship to the members of the auxiliary Society, which we most heartily welcome. Our honored Secretary, who was with us one year ago at this time, and who sat at my left, who so faithfully served us for so many years, has gone to his reward. "Well done, good and faithful servant." We may feel to congratulate each other on our progress, compared with other Horticultural Societies in the country. The opportunity of seeing at our weekly and monthly exhibitions of fruit and vegetables, the increase in horticultural products has been made interesting. Our exhibitions teach our contributors to make careful selection of fruit, both in color, form and size. It has taught the proper cultivation of

soil, and how to ensure the best results. Flowers and trees are planted in the parks and private courts, each contributing its share to the art of Horticulture. Each season we renew these flowers, and this is a special part of the work of the Association. I well remember when only a few gardens ornamented the lands and an exhibition was unknown. Horticulture has always had its charms for both the rich and the poor. Our forefathers of this Society have passed to their reward; we have a duty to perform that we may honor our predecessors. The introduction of flowers and trees by this Society has helped to beautify the landscape; Newton Hill before the Parks-Commission system, for an illustration; a few years ago it was a common pasture, now it is crowned by trees and presents a beautiful landscape. But to turn to the feature of the evening. We are favored with the presence of many distinguished guests.

The occasion will be made very interesting by the speeches which are to follow, and we are favored to-night with the presence of toastmaster Henry L. Parker, who will have charge of the business.

ADDRESS OF HENRY L. PARKER.

Ladies and Gentlemen:—

I hope that none of you will think it is of my own free will and accord that I turn up every year as your toastmaster. I suppose that some of you have heard the story of the gentleman who was riding along with the farmer behind the old gray mare, which he called "Mary." The gentleman's curiosity was aroused. "What makes you call your horse 'Mary'?" "Named her after my mother-in-law, because she interferes." I said when your President asked me to take this position that I thought he had better pass it along; but he was inflexible, so I bow to his authority. We have gathered here to-night in response to our leader in this our own hall, paid for pretty much, for it is one of the richest societies. We have here representatives from Rhode Island, Connecticut, and the Massachusetts Society. The Mayor is here not simply to perform his duty, but because he likes to come. He wants a little recreation; he wants a little let-up from the course of municipal state; and I presume that he is now dealing with three-cent fares, big fires, etc. He has come here for a little recreation, but I am going to ask him to make a few remarks. It gives me great pleasure to introduce Mayor A. B. R. Sprague as the first speaker of the evening.

Mayor A. B. R. Sprague. *Mr. Toastmaster, Ladies and Gentlemen:*—Your last intimation of the toastmaster was to be brief, and no

nudging in that particular will be necessary. I am very glad to meet you, ladies and gentlemen; I am very proud to be a member of this Society. I am proud to be a member of the second wealthiest Horticultural Society in the world; think of it, you should be very proud of your standing. Now this Society was incorporated and organized when I came to Worcester to live as a boy. A few years ago I did take a few dollars in premiums. For two years I have come here without being able to pay for my banquet ticket; but it is of no use, the President, as the toastmaster says, is authority here and must be obeyed without question. If I read right the first horticultural society was formed in Eden. It had but one member to begin with, and he was president, secretary and treasurer. This one member was Adam, and finally it was decided to admit ladies to membership. There was some trouble about fruit, and I think it was mean in Adam to say what he did concerning Eve. I was going to ask my friend Dr. Harris to inform me on this question as it is a proper study. I do not think that he had any right to say that to clear himself. I think that it is a mighty mean thing in a man to remark about a woman as he did, and he ought to be ashamed of himself. As they went out to engage in horticulture, going down into the land of Israel, Moses, whom they had engaged as their leader, selected twelve stalwart men to select the land. But they went into the land of Canaan and found there by the brook of Eschol some grapes, and I say that this Society never produced such clusters of grapes as were raised there by the side of that brook. This is a true story, Mr. President; this is no Jonah story. I never have seen one on exhibition that could compete with this. I don't know what would be said of that bunch of grapes which the prophet Amos gathered at the sycamore tree, so that in those olden times we may acknowledge that the grower made more progress in raising grapes. We ought to be quite interested in the development made by the fruit growers. As you drive through the country and see beautiful flowers by the gate you will know that there are lovely people living within. I beg your pardon for taking so much of your time.

Mr. Parker.—The Pomological Society of Connecticut is also represented here by Mr. Edwin Hoyt, of New Canaan, Conn.

Mr. Edwin Hoyt. *Mr. President and Friends:*—I have met with two surprises,—one when I received the invitation from your honored President to attend the banquet, and the second when your toastmaster called upon me to speak. While I am a horticulturist I am not a speaker. I was not brought up that way, but at the same

time I cannot help but express my gratification for the surprises that I have had in being here this evening. I have always liked an organization which brought the ladies in. I never belonged to any society which was composed of gentlemen alone and I never want to. When I meet with ladies I always feel that I am in safe company. I am glad to be in the company where there are so many ladies who are interested in horticulture. There are ladies I know who are in sympathy with our work. I feel proud that I am a horticulturist. While I live over the line in the land of Canaan I can come here from home; and while I never visited Worcester, I see many faces that we have done business with for years; and I am proud to say that much of the fruit in this country first came from the New Canaan nursery. We have sent trees all over this State and you are receiving the benefit of our labor; it certainly is a promising business, it stands to the front. If we could go back fifty years and see what our grandfathers had and compare it with our business now, we would see a great contrast between the fruit of the present time and that of the olden time, also a difference in the way in which our grandfathers and grandmothers lived. When I look back and see my mother, who is now living and is 93 years old and a mother of ten children, and see the old spinning-wheel, she used to make our frocks and knit our stockings and then make comfortables, I don't see how a woman in those days could stand it; it is wonderful to me how they did it. Two years ago they started a creamery in New Canaan and in a short time Mrs. Hoyt said, "Let the cream go," and was glad to get it out of the house, and we won't get it back. You ladies here in the city don't realize what we farmers have to do. It was my good fortune two years ago to visit California. It was pleasant to see the plants growing in mid-winter, to see the fuchsia, calla and heliotrope in that country; but I tell you when I got home I was glad I lived in old Connecticut. There is no place like New England; there is no place where you can find such advanced cultivation as in old New England. I am glad that I was reared in New England. There are but few years that the President and myself have to work in this Society; fifty-five years now this Society has lived, and fifty-five years from this time we may see as much improvement in the horticultural line as we have seen in the fifty years of our life. The brother has spoken of the land of Canaan. Yes; "the land of Canaan" is a beautiful spot, especially new Canaan. I am better acquainted with new Canaan than I am with old. It is the land which flows with milk and honey. When I made up my circulars I put on them for my trade-mark a tree with

two men carrying a large bunch of grapes on their shoulders. I stamped it upon my letter-heads. A party out in Illinois sent for a circular of the "Green Mt. Grape." I got a letter back from him and he said, "What a lie! no one ever grew such a bunch of grapes as that in the world." I am taking up too much of your time. I am glad to be with you, and I hope I may have the opportunity to be with you again.

Mr. Parker.—Massachusetts, Connecticut, and Rhode Island, I believe, are the three oldest societies in this country; the Rhode Island Society is represented here to-night by its Secretary, Mr. C. W. Smith.

Mr. Smith. *Ladies and Gentlemen:*—I wish simply to express my acknowledgment of our Society to you. This, I think, is the fourth time that I have had the pleasure of meeting with you; each seems to be a greater pleasure, and when the invitation came to me for to-night I did not feel able to resist it. I had three other invitations for banquets, but I chose this one, and for this reason I am with you to-night, it must be because you gave so good a lunch. I remember reading the humorous works of "Josiah Allen's Wife." One of the quaint sayings which she made I was so pleased with that I put it on paper (reads), "I will have good victuals as long as I am Josiah Allen's wife." I regret the absence of the Secretary, who has gone to his reward. It is especially a feeling of sorrow to me, although not as well acquainted with him as some of you; it leaves me second oldest Secretary of the Horticultural Societies of New England. I thank you, Mr. President, for your kind invitation to be with you to-night.

Mr. Parker.—There are two or three representatives of the Massachusetts Society here to-night. I am going to call on H. W. Wilson as orator of the evening.

H. W. Wilson. *Mr. President:*—I think it is an unexpected honor. I have been enjoying the good time, and I feel a little embarrassed, for I don't hardly know where to begin. I might allude to one or two topics; take the grape, the grapes of Eschol and Syria are the largest grapes raised. Some bunches weigh from five to six pounds. There was a bunch raised in England which weighed nine and one-half pounds. At Boston a bunch was exhibited which was raised in this State and weighed eight pounds and twelve ounces. The Syrian grape is raised today, and bunches raised under glass have been known to weigh twenty pounds. I do not know but what I have lost the thread of

what I was going to say. But I do like to talk to people who are interested in the soil. You make a difference between Horticulture and Agriculture; where Agriculture leaves off Horticulture commences. In Agriculture a man has to grunt for a living, in Horticulture he cultivates the soil for fun. Four classes are interested in the cultivation of the soil: First, the one who depends upon his acres for subsistence, he feels that his success in life depends upon the earth; Second, the gentleman of leisure and wealth; Third, one who has the taste but no time; Fourth, the one who does it simply to make a display, just as some people are always buying books to keep up libraries in their houses, and try to pose as literary people, even if they never read the books. The first one of these four classes is the only one with whom I like to deal; and I find them men of truth, I find them men whom you can depend upon, men who are cordial and who meet you with sincerity. I have found these people my friends for the last twenty-five years. I find that these are certain characteristics that only the department of human labor can achieve. You go with me down on the Cape and you will find the little town of Mashpee, and you will find there a people as bright as any in New England. I went there as a disciple of Isaac Walton. These people are descendants of the Indians and they take a great deal of pride in their ancestry. A son of one of them came and took me to Falmouth; he had a nice democrat wagon and nice black horse and good harness and robe. Mr. President, I should like to talk longer, but there are others whom we want to hear from.

Mr. Parker.—The Fruit Growers Association is now holding its annual session in Worcester. That society, as you all know, was organized a few years since in our hall, and we might call it from our society. Its first president was a member of our Society and also the present president. He obtained his training as judge of fruit largely in our weekly exhibitions, and I now introduce James Draper, President of the Massachusetts Fruit Growers' Association.

Mr. Draper. *Mr. President, Ladies and Gentlemen:*—Having been chosen to preside over the Fruit Growers Association, an organization composed of practical growers and fruit farmers all over the State, I will state that it is but an outgrowth of this good old Horticultural Society, and I take great pride in having been associated in years gone by with those who gave so much to build up this Society. I recall with pleasure listening to Jaques, Earle and Colton, those early pioneers, who had so much to do with the early horticultural life of Worcester, and the lamented Secretary, Edward Winslow Lincoln,

for the past twenty-five years. Who could be associated with such a noble character without gaining inspiration for one's life's work! and I realize what a great responsibility is coming upon the younger men of this Society. Let us take up our work fully realizing the responsibility that is laid upon our shoulders; let us take it up earnestly, young men and women, and see that it does not suffer at our hands.

Mr. Parker.—There is another gentleman here to-night representing the Massachusetts Society to whom this Association is indebted for papers at our weekly meetings, for he is one of the most accomplished entomologists in the State. I take pleasure in presenting to you Mr. E. W. Wood, of West Newton.

Mr. Wood. *Mr. Toastmaster, Ladies and Gentlemen:*—It was my privilege to be present at your first banquet, five years ago. It struck me as one of the most pleasant and memorable occasions I had ever attended. I made the statement that the crowd you gathered that year was for the novelty of the thing, but I am glad to see that my predictions were not fulfilled and that your numbers seem to be limited only by the capacity of the hall. As you lose your active members from year to year, you will have no difficulty in replacing them by the other members as they come along. The work of the Massachusetts and Worcester Horticultural Societies has been substantially in the same line. We copied our mode of exhibiting fruit from the Worcester Society. Our exhibitions were made in classes of 20, 15, 12, 6, 3. Our committee first saw this method of exhibiting fruit in classes at Worcester, and then it was adopted by the Boston Society at the next meeting. Concerning the new crops or orchards, there is no place you can gain as much as in the exhibitions, there is no place where such a good idea of success or failure can be gained; those of you who have not been in the habit of doing this your fruit will shrink most terribly when you come to exhibit it. A gentleman in Roxbury told me one day, "I never was so disappointed in my life as I am to-day. I have been growing Seckel pears for an exhibition which I thought was next week. I have pears that are a third larger than any that are exhibited here." "Well," said I, "if you have pears like what you say you have go right home and get back as soon as you can." He took the cars and went home as soon as he could, and the committee was told what he had done. "I will be back at 12.30, so keep an eye out for me." He came with a little basket under his arm, walked up to the table where the pears were, lifted the cover of his basket, and how the perspiration started when he saw that those pears were more than half as large again as his! I said to

him, you saw the fruit at home on the trees and those Seckels looked as large as Bartletts. So you see this is the best thing that could happen to a man except the highest success; because had he not brought his fruit there, he would have always thought his fruit superior. When he went in and saw them, if he had been a true Yankee he would have asked how they were grown. I have never seen a horticulturist yet who was not willing to tell how he did it. Gentlemen, you must use your tongue as well as your eyes at an exhibition. If you watch when you are at an exhibition you will see men who are going to set out pear trees take out their memorandum books and put down what pears have the best color, which are the best for market use, which for café and hotel.

Mr. Parker.—Another member of the Massachusetts Society to whom we are indebted. He informs me that he has been talking all day at some institution. I will now introduce Hon. Aaron Lowe.

Hon. Aaron Lowe. *Mr. President:*—When I received your invitation some three weeks ago I was not aware that it was such a magnificent affair. I came here to-day, as I supposed, for the meeting of the Massachusetts Fruit Growers Association, and I certainly received great help. Take a backward look for perhaps forty or fifty years and call to mind the great improvement in flower and fruit. In looking back that time I see that the old Crab-apple is the only apple. Certainly in following along you can see that two societies have done a great work,—your Society and the Massachusetts. Frequently I have come across the names Hartwell, Hadwen, Rice and Kinney in our Boston exhibitions. I am glad to see so many ladies here to-night. A gentleman asked me what he could do to increase the membership of the Grange, simply get the young ladies to join and the young gentlemen will come. I certainly have been very much pleased to listen to the remarks made here to-night. We can look back and see that we have made great advances. Our friend Mr. Wood said we should start in raising fruit and vegetables. I had the honor of introducing certain kinds of vegetables that are to-day known as Lowe's.

In the fruit collection on the tables of the Massachusetts Society exhibitions there are every year new varieties coming forward. Mr. Hoyt spoke about the grape. We can remember when we were boys that there was no grape to be found except the old Isabella and the wild grape. Mr. President, I thank you very cordially for your kind invitation.

Mr. Parker.—I will now call upon a gentleman representing our

own Society, and by the time he has finished it will be time to pronounce the benediction. I will now call upon Mr. E. I. Comins.

Mr. Comins. It was my privilege about a year ago to take a trip to California, accompanied by my wife. While stopping with friends at Petaluma, Sonoma County, we chanced to hear of a Worcester County boy, Luther Burbank, located in Santa Rosa, sixteen miles from Petaluma. As he was born in Lancaster, Mass., where my wife was born, and as we learned somewhat of his wonderful success with fruits and flowers, we felt quite anxious to make his acquaintance and see something of what he has accomplished. Learning from a San Francisco paper, that he was a very busy man and much annoyed by curious visitors, I took the precaution to write him a line stating where we were from, that we proposed driving to Santa Rosa soon and that, if agreeable, we would call and give him a hearty New England handshake. Return mail brought a most cordial invitation to call at his home. We did so and no pleasanter hours were spent in California. The papers on the Pacific Coast speak of him as the "wizard of horticulture," the "Edison of plant life," etc., etc., and the work he has done in propagating new varieties of fruits and flowers is simply marvellous, and his wonderful success is another demonstration of what New England pluck and enterprise can accomplish.

His early education consisted of what could be acquired on the farm and what the schools of his native town could give. While still a boy he came to Worcester and worked in the shops of the Ames Plow Co. Owing to some trouble with his eyes, I think, he was obliged to seek out-door employment, and having a decided taste for rural life he went to the town of Lunenburg and engaged for a few years in market gardening. While here he put upon the market the "Burbank" seedling potato, now known throughout the country. This was before he was 21 years of age.

Later he went to California and engaged in the nursery business at Santa Rosa. After a few years of success in this business he sold it out and since then has devoted his attention exclusively to developing and putting upon the market new varieties of fruits and flowers, and with such success that his name is extensively known both at home and abroad. For this purpose he secured a tract of land some miles from his home, with soil exactly adapted to his purpose, sloping to the east for the morning sun, and near enough to the Pacific Ocean to receive the benefit of its beneficent breezes. We very much regretted we were not able, for want of time, to visit this garden,

where he said he had ten thousand calla lilies then in bloom. But at his home garden he showed us many plants of great interest. Among them was a red poppy with its petals silver lined, and a calla lily the blossom of which was a beautiful yellow. Other callas not then in bloom were of different colors. These, I think, came from Africa and the bulbs are valued at $100, and even more each. He continues to have much interest in our society, spoke of the members who have long been identified with it and inquired particularly about our honored President.

Mr. Parker.—The time for pronouncing the benediction has come and I will call on one of the original charter members, Lieut. Samuel Hathaway.

Lieut. Samuel Hathaway.—I stand here as a representative of the original members of the Society, and somewhere in this audience there is another gentleman, H. H. Chamberlin. In the hall below, hanging near the chandelier, are the portraits of Gov. Levi Lincoln and Daniel W. Lincoln, and soon there will hang another whom we all know, our honored Secretary and the great Park-Commissioner of this city, Edward Winslow Lincoln. But he has gone to join that throng of illustrious names. Men toil and strive and give the strength of youth and manhood to make a name. His memory is very great in the hearts of the community. There are hardly a half-score of the original members of 1842, and soon they will turn their toes up to the daisies.

Men die, but God's truths survive;
  Flowers fade, and fruits decay;
But nature on them thrive
  Fresh blossoming day by day.

Golden grain, fruits and flowers,
  Of life's richest treasures are;
They bask in Eden's bowers,
  They were all God planted there.

Oh let us then, plant and sow
  Virtue's grains, beauty's flowers,
And may they to the harvest grow
  In these grateful hearts of ours.

The formal exercises were brought to a close at half-past nine o'clock. The festivity of music and dancing was continued by the younger members of the Society and their friends until a much later hour.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1896-97.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Edward L. Davis,	Worcester.
Henry Woodward,	"	Henry Reed,	"
John B. Bowker,	"	Henry Phelps,	"
B. W. Potter,	"	*Freeman M. Marble,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	Lewis A. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward.	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"	Mrs. T. A. Dawson,	"
Fred. H. Chamberlain,	"	Frederick B. Madaus,	"
William J. Wood,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

George E. Francis, 1899. Nathaniel Paine, 1898. Henry L. Parker, 1897.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, Joseph Jackson.

ON NOMENCLATURE:

Henry L. Parker, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, *F. M. Marble, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

O. B. Hadwen, *Chairman.*

Frederick A. Blake,	Henry L. Parker,	Charles Greenwood,
Edward Hall,	James Draper,	Calvin L. Hartshorn,
Albert H. Lange,	A. J. Marble,	Simon E. Fisher,
Mrs. F. H. Merrifield,	George C. Rice,	Herbert R. Kinney,
William J. Wood,		

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
William J. Wood.	Henry Phelps.	Charles Greenwood.

* Since deceased.

SCHEDULE OF PREMIUMS

OFFERED BY THE

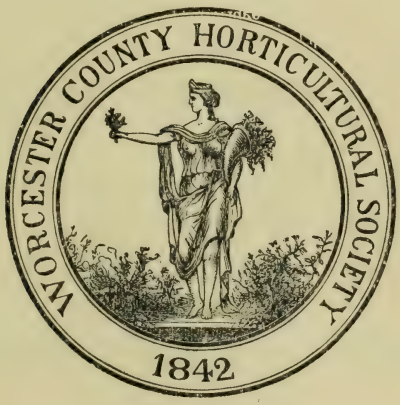
WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR

1897.

The attention of Exhibitors is particularly called to the Rules and Regulations, General and Special.



Worcester, Mass.
CHARLES HAMILTON, PRINTER,
311 MAIN STREET.
1897.

COMMITTEE

ON

ARRANGEMENTS AND EXHIBITIONS.

O. B. Hadwen, *Chairman.*

Frederick A. Blake,
Edward Hall,
Mrs. F. H. Merrifield,
Albert H. Lange,
James Draper,
Henry L. Parker,
Arthur J. Marble,
George C. Rice,
William J. Wood.

Charles Greenwood,
Calvin L. Hartshorn,
Simon E. Fisher,
Herbert R. Kinney.

President, O. B. Hadwen.

Secretary, Adin A. Hixon,
No. 18 Front Street.

JUDGES OF AWARD.

Flowers, Plants, Etc.—William J. Wood.
Fruits, Etc.—Henry Phelps.
Vegetables, Etc.—Charles Greenwood.

COMMITTEE ON NOMENCLATURE.

Henry L. Parker,
Hermann F. A. Lange,
George E. Francis,
James Draper,
Charles Greenwood,
F. M. Marble,
O. B. Hadwen.

GENERAL RULES FOR ALL EXHIBITIONS.

A. Strict conformity to the Regulations and Rules will be expected and required, as well for the benefit of Exhibitors as for the convenience of the Officers of the Society.

B. Correct and legible names must be attached to each and every Flower or Plant entered in a class of named varieties.

C. All articles offered for premium must remain within the Hall throughout the hours of Exhibition, unless special permission for their removal shall be granted by the Committee on Exhibitions, etc.

D. All *Small Fruits* must be entered in boxes or baskets (except in the case of Strawberries or Currants, which are to be shown "*flat*"); but they may be displayed subsequently in plates or dishes, at the taste of the exhibitor.

E. No person shall take more than one premium, under the same number.

F. The Judges may correct, before the close of any Exhibition, awards made by them, if satisfied that such were erroneous.

G. The cards of competitors shall be put, reversed, beneath the plates; and the Judges of Award shall be excluded from the Hall of Exhibition until the Exhibition itself is ready for judgment.

H. Competitors are expected to conform strictly to the conditions under which articles are invited. Evasion or violation of them may be reported to the TRUSTEES for future disqualification of the offender.

RULES AND REGULATIONS.

1. Exhibitions will be held on Thursday, March 18, April 8, and May 13. Commencing June 3 there will be Exhibitions every Thursday, excepting July 1, until and including October 21, A. D. 1897. The hours of Exhibition will be between 3 and 4.30 o'clock. Articles offered for premiums must be in the Hall by 2.15 o'clock P. M. of the days of Exhibition. Betweeen 2.15 and 3 o'clock the Hall will be in exclusive charge of the Secretary and the Janitor, who will allow no one else to be present. The Judges of Award may be admitted under the limitations of GENERAL RULE G.

2. Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are not members of the Society; and it is strictly required that all specimens offered for premium shall have been grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least two (2) months previous to the date of exhibition.

3. After the articles are arranged they will be under the exclusive charge of the Judges, and *not even the owners* will have liberty to *remove* them until the exhibition is closed; when they will be delivered as the contributors may direct.

4. No cards of a business nature will be allowed in any exhibition.

5. Where a certain number or quantity of Plants, Flowers, Fruits or Vegetables is designated in the schedule, there must be neither more nor less than that number or quantity of specimens shown; and in no case can any other varieties than those named in the schedule be substituted.

5. It will be the duty of the Judges to *exclude from competition all inferior specimens.* Also, all such *Designs* as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

7. The Committee on arrangements have power to change the time of exhibition for any article, if an earlier or later season renders such change necessary; and the Secretary is requested to give notice of one week, in some daily paper, and also at the preceding exhibition, when a change in the Schedule is proposed.

8. All articles offered for premium must be correctly named. Indefinite appellations such as "Pippin," "Sweeting," "Greening," etc., will not be considered as names. Any person exhibiting the same variety of Fruit or Vegetable, under different names, or exhibiting as grown by himself, Flowers, Fruit or Vegetables grown by another, thereby violating the objects and rules of the Society, shall be debarred from competing for the Society's premiums until reinstated.

9. No Flowers, Plants, Fruits or Vegetables will be entitled to a premium or gratuity unless they possess points of superiority; and the Judges are *strictly required* to withhold awards if, in their opinion, the articles exhibited do not merit them; nor shall any specimen for which a premium has been once awarded, receive another during the season.

10. Competitors will be required to furnish information as to their mode of cultivation, and to present specimens, for trial and examination, if requested.

11. In all exhibitions of Cut Flowers, for competitition, the use of foliage must be restricted to that of the varieties shown; and not more than five blooms, clusters, sprays or spikes, all of which shall be of one color, and of one variety, shall be allowed in the same bottle, or vase, except when otherwise specified in the schedule. The Judge may correct any error that he thinks was without deliberate purpose.

12. No Judge shall award a premium or gratuity in any case wherein he is a competitor, or has an actual or resultant interest; in any such case the judgment shall be rendered by any three of the Committee on Arrangements and Exhibitions whom the Judge shall invite.

13. No Judge shall require anything of competitors respecting their exhibits, which is not distinctly specified in the schedule. No Flowers, Fruits, etc., etc., shall be put on the tables, for competition for premiums, by any person who is a judge as to the awards to be made for Fruits, Flowers, etc., etc.

14. The standard number required for an exhibit, whether of Fruits or Vegetables, will be twelve (12); unless otherwise specifically declared. The usual limit of measure, save for SMALL FRUITS, will be a half-peck.

15. All premiums that are not claimed within three months after the close of the official year shall be forfeited to the Society.

16. The awards will be made known as soon as the cards can be filled out and placed upon the tables.

17. "Downing's Fruits of America," revised edition, will guide the Judge of Fruits in his decisions upon matters at issue.

☞The Judges are authorized by the Trustees to invite the assistance of competent and discreet persons in the discharge of their duties.

FLOWERS, PLANTS, FRUITS, & VEGETABLES.

A. D. 1897.

☞ THE COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS would direct the earnest attention of the Judges to *Rule 6!*

6. *It will be the duty of the Judges to exclude from competition all inferior specimens. Also, all such designs, as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.*

SPECIAL RULES.

1. Exhibitors will add value to their exhibits by having all specimens correctly and legibly named, and the number of varieties written on the entry cards. Notice of which will be taken by the Judge in awarding the premiums.
2. The Judge shall not award gratuities for flowers that are covered by the call of that day.
3. While it is expected that Exhibitors will take pains to correctly name their exhibits, the Judge will not exclude an exhibit for mistake in nomenclature.
4. In all exhibitions of Lilies the pollen may be removed.

By vote of the Trustees, all entries must be made to the Secretary, and all cards made out by him or his assistant.

Thursday, March 18.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

HYACINTH,—IN BLOOM.—				
No. 1. Six plants, four premiums	$3 00	2 00	1 00	50
PRIMULA SINENSIS,—IN BLOOM.—				
No. 2. Four plants, four premiums	3.00	2 00	1 00	50
PRIMULA,—ANY OTHER VARIETY, IN BLOOM.—				
No. 3. Four plants, four premiums	3 00	2 00	1 00	50
CINERARIA,—IN BLOOM.—				
No. 4. Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
CYCLAMEN,—IN BLOOM.—				
No. 5. Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
No. 6. One plant, three premiums		1 50	1 00	50

CARNATION.—

No. 7. Cut blooms with foliage. Not to exceed 24 vases, four premiums	4 00	3 00	2 00	1 00

ARUM (RICHARDIA),—IN BLOOM.—

No. 8. Best collection; grown in an 8 in. pot; four premiums	3 00	2 00	1 00	50

AZALEA INDICA,—IN BLOOM.—

No. 9. One plant, three premiums		3 00	2 00	1 00
No. 10. Three plants, four premiums	5 00	3 00	2 00	1 00

CUT FLOWERS.—

No. 11. Not to exceed twenty blooms (clusters, sprays or spikes in vases), four premiums	3 00	2 00	1 00	50

APPLE.—

No. 12. Any variety, named, gratuity.

PEAR.—

No. 13. Any variety, named, gratuity.

VEGETABLE.—

CABBAGE,				
No. 14. Brunswick, 3 specimens, three premiums.	$1 50	1 00	50	
No. 15. Red, three premiums	1 50	1 00	50	
No. 16. Savoy, three premiums	1 50	1 00	50	
CELERY,				
No. 17. Six specimens, three premiums	1 50	1 00	50	
SQUASH,				
No. 18. Hubbard, 3 specimens, three premiums	1 50	1 00	50	
No. 19. Any other variety, 3 specimens, three premiums	1 50	1 00	50	
MUSHROOMS,				
No. 20. Twelve specimens, three premiums	2 00	1 50	1 00	
TURNIP,				
No. 21. Swede, Yellow, 6 specimens, three premiums	1 50	1 00	50	
No. 22. Swede, White, 6 specimens, three premiums	1 50	1 00	50	
No. 23. White Egg, 12 specimens, three premiums.	1 50	1 00	50	

BEET,

No. 25. Turnip, three premiums..... 1 50 1 00 50

CARROT,

No. 26. Intermediate, three premiums..... 1 50 1 00 50

LETTUCE,

No. 27. Six heads, three premiums.....2 00 1 50 1 00

Thursday, April 8.

☞ *The* COMMITTEE ON ARRANGEMENNTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS—BASKET.—

No. 28. No restrictions, four premiums....3 00 2 00 1 00 50

ZONALE GERANIUM,—IN BLOOM.—

No. 29. Four plants, distinct in color, four premiums 3 00 2 00 1 00 50

CUT FLOWERS,—NOT TO EXCEED 20 VASES.—

No. 30. Not to exceed 5 blooms, clusters, sprays or spikes in each, four premiums..... 3 00 2 00 1 00 50

HYACINTH,—IN BLOOM.—

No. 31. Twelve plants, not less than 6 varieties, four premiums..... 4 00 3 00 2 00 1 00

NARCISSUS,—NOT TO EXCEED 24 VASES.—

No. 32. Four premiums..... 3 00 2 00 1 50 1 00

TULIP.—

No. 33. Four pots or pans, not to exceed 12 bulbs in each, not less than three varieties, four premiums. 3 00 2 00 1 50 1 00

APPLE.—

No. 34. Any variety, named, gratuity.

PEAR.—

No. 35. Any variety, named, gratuity.

VEGETABLE.—

HORSE RADISH,

No. 36. Twelve specimens, two premiums... .... $1 00 50

PARSNEP,

No. 37. Hollow Crown, three premiums		1 50	1 00	50
No. 38. Student, three premiums		1 50	1 00	50

RADISH,

No. 39. Long, two bunches (6 in each bunch), three premiums		1 50	1 00	50
No. 40. Globe, two bunches (6 in each bunch), two premiums			1 00	50

SALSIFY,

No. 41. Three premiums		1 50	1 00	50

LETTUCE,

No. 42. Six heads, four premiums	2 00	1 50	1 00	50

RHUBARB,

No. 43. Any variety, three premiums		1 50	1 00	50

DANDELION (cultivated),

No. 44. One-half peck, three premiums		1 50	1 00	50

SPINACH,

No. 45. One-half peck, three premiums		1 50	1 00	50

Thursday, May 13.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at* $3\frac{1}{2}$ *o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

PANSY,—WITHOUT FOLIAGE.—

No. 46. Not to exceed 30 vases, one stem in a vase, four premiums	$3 00	2 00	1 00	50

HYACINTH,—OPEN CULTURE.—

No. 47. Not to exceed 24 vases, one spike in each, four premiums	3 00	2 00	1 00	50

PELARGONIUM—(FANCY AND SHOW)—IN BLOOM.—

No. 48. Four plants, of distinct varieties, three premiums	3 00	2 00	1 00

TULIP,—OPEN CULTURE.

No. 49. Display not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 50. Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50
No. 51. BASKET,—No restrictions, four premiums	3 00	2 00	1 00	50

*

AZALEA—(MOLLIS).—

No. 52. For the best display in vases, four premiums 3 00 2 00 1 00 50

VEGETABLE.—

ASPARAGUS,

No. 53. Two bunches, twelve specimens each, three premiums $1 50 1 00 50

DANDELION,

No. 54. Cultivated, half-peck, three premiums.... 1 50 1 00 50

ONION,

No. 55. Two bunches, six in each bunch, three premiums..... 1 50 1 00 50

RADISH,

No. 56. Long, two bunches, six in each bunch, three premiums 1 50 1 00 50

No. 57. Globe, two bunches, six in each bunch, two premiums..... 1 00 50

RHUBARB,

No. 58. Linnæus, three premiums..... 1 50 1 00 50

No. 59. Victoria, three premiums..... 1 50 1 00 50

SPINACH,

No. 60. Half-peck, three premiums..... 1 50 1 00 50

Thursday, June 3.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 61. Not to exceed 30 vases, four premiums.....$3 00 2 00 1 00 50

No. 62. ONE VASE.—The specimens not to be tied or wired, four premiums. 3 00 2 00 1 00 50

NATIVE FLOWERS.—

No. 63. In vases, no duplicates, six premiums..... 3 00 2 50 2 00 1 50 1 00 50

PANSY,—IN POTS.—

No. 64. Six plants in bloom, distinct in color, four premiums..... 3 00 2 00 1 00 50

BEGONIA,—IN BLOOM.—

No. 65. One plant, four premiums..... 2 00 1 50 1 00 50

IRIS.—

No. 66. Not to exceed 10 vases, four premiums 3 00 2 00 1 00 50

RHODODENDRON.—

No. 67. Display, in vases, four premiums... 3 00 2 00 1 00 50

AZALEA,—GHENT.—

No. 68. Display in vases, four premiums.. 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 69. From hardy plants and shrubs, display not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

VEGETABLE.—

ASPARAGUS,

No. 70. Two bunches, twelve specimens each, three premiums..... $1 50 1 00 50

BEET,

No. 71. Early, twelve specimens, three premiums. 2 00 1 50 1 00

CUCUMBER,

No. 72. Three specimens, three premiums 1 50 1 00 50

SPINACH,

No. 73. Half-peck, three premiums..... 1 50 1 00 50

Thursday, June 10.

CUT FLOWERS.—

No. 74. One vase, the specimens not to be tied or wired, four premiums....$3 00 2 00 1 00 50

BASKET,—NO RESTRICTIONS.—

No. 75. AMATEUR,—four premiums..... 3 00 2 00 1 00 50

No. 76. FLORIST,—four premiums..... 3 00 2 00 1 00 50

HAND BOUQUET.—

No. 77. Not to exceed nine inches in diameter, four premiums..... 3 00 2 00 1 00 50

No. 78. Fuchsia, distinct varieties, four plants in bloom, four premiums.. 3 00 2 00 1 00 50

HYDRANGEA,—ONE PLANT IN BLOOM.—

No. 79.	Hortensis, three premiums	2 00	1 00	50	
No. 80.	Otaksa, three premiums	2 00	1 00	50	
No. 81.	Thomas Hogg, three premiums	2 00	1 00	50	

STRAWBERRY.—

No. 82.	Beder Wood, 24 berries, flat, three premiums	1 50	1 00	50	
No. 83.	Crescent, three premiums	1 50	1 00	50	
No. 84.	Any variety, not scheduled, gratuity.				

VEGETABLE.—

BEET,

No. 85.	Twelve specimens, three premiums	1 50	1 00	50	

PEA,

No. 86.	One-half peck, four premiums	2 00	1 50	1 00	50

LETTUCE,

No. 87.	Six heads, three premiums	1 50	1 00	50	

Thursday, June 17.

☞ This exhibition will be open to the public from 3 P. M. until 5.30 P. M.

ROSE.—

[TO BE SHOWN IN THE VASES OF THE SOCIETY.]

No. 88.	Best twelve blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums	$4 00	3 00	2 00	1 00
No. 89.	For the best six blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums	3 00	2 00	1 00	50
No. 90.	Display, not to exceed 30 vases, of H. P. Roses, one bloom or cluster in each, five premiums	5 00	4 00	3 00	2 00	1 00
No. 91.	For the best basket of Roses, four premiums	3 00	2 00	1 00	50

No. 92. Vase, H. P. Roses, shades of one color, not to exceed 10 blooms, three premiums 3 00 2 00 1 00

PÆONIA.—

No. 93. Not to exceed 20 vases, one flower in each, five premiums 4 00 3 00 2 00 1 00 50

STRAWBERRY.—

No 94. Bubach, 24 berries, flat, four premiums. $2 00 1 50 1 00 50

No. 95. Charles Downing, three premiums..... 1 50 1 00 50

No. 96. Greenville, four premiums... .... 2 00 1 50 1 00 50

No. 97. Haviland, three premiums..... 1 50 1 00 50

No. 98. Sharpless, four premiums..... 2 00 1 50 1 00 50

No. 99. Other varieties, not scheduled, gratuity.

VEGETABLE.—

PEA,

No. 100. Nott's Excelsior, one-half peck, three premiums $1 50 1 00 50

No. 101. Any other variety, named, one-half peck, four premiums 2 00 1 50 1 00 50

ONION,

No. 102. Any variety, two bunches, six each, three premiums..... ..... 1 50 1 00 50

TURNIP,

No. 103. Any variety, three premiums 1 50 1 00 50

Thursday, June 24.

CUT FLOWERS.

No. 104. Display, not to exceed 24 vases (no duplicates), five premiums $3 00 2 00 1 50 1 00 50

HAND BOUQUET.—

No. 105. Not to exceed 9 inches in diameter, four premiums 3 00 2 00 1 00 50

CAMPANULA MEDIA.—(CANTERBURY BELL).

No. 106. Display, not to exceed 24 vases, three premiums..... 2 00 1 00 50

DIANTHUS BARBATUS.—(Sweet William).

No. 107. Display, not to exceed 40 vases, one truss in a vase, four premiums 3 00 2 00 1 00 50

FOXGLOVE.—

No. 108. Display, not to exceed 24 vases, three premiums 2 00 1 00 50

No. 109. Display of H. P. Roses, not to exceed 24 vases, one bloom or cluster in each, five premiums..... 3 00 2 00 1 50 1 00 50

STRAWBERRY.—

No. 110. Leader, 24 berries, flat, three premiums.. 1 50 1 00 50

No. 111. M. A. C., No. 24, three premiums..... 1 50 1 00 50

No. 112. Marshall, four premiums..... 2 00 1 50 1 00 50

No. 113. Miner, three premiums..... ..... 1 50 1 00 50

No. 114. Parker Earle, three premiums..... 1 50 1 00 50

No. 115. Other varieties, not scheduled, gratuity.

No. 116. Best collection of recent introduction, not scheduled, not less than five varieties, four premiums 5 00 3 00 2 00 1 00

CHERRY.—

No. 117. Coe's Transparent, one quart, three premiums $1 50 1 00 50

No. 118. Gov. Wood, three premiums..... .... 1 50 1 00 50

No. 119. Other varieties, not scheduled, gratuity.

VEGETABLE.—

Beet,

No. 120. Turnip rooted, 12 specimens, three premiums $1 50 1 00 50

Carrot,

No. 121. Two bunches, six in each, three premiums 1 50 1 00 50

Pea,

No. 122. McLean's Advancer, one-half peck, four premiums 2 00 1 50 1 00 50

July Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums.... $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D.

Thursday, July 8.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ZONALE GERANIUM,—IN VASES.

No. 123.	Display, not to exceed 24 vases, one truss in a vase, four premiums	$3 00	2 00	1 00	50
No. 124.	LILIUM CANDIDUM. Twelve spikes, four premiums	3 00	2 00	1 50	1 00

CUT FLOWERS.—DISTINCT VARIETIES.—

No. 125.	Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

IRIS KÆMPFERI.—

No. 126.	Not to exceed 20 vases, one spike in each, four premiums	3 00	2 00	1 00	50

GLOXINIA,—DISTINCT.—

No. 127.	Four plants in bloom, four premiums	3 00	2 00	1 00	50

RASPBERRY.—

No. 128.	Cuthbert, one quart, three premiums		1 50	1 00	50
No. 129.	Turner, three premiums		1 50	1 00	50
No. 130.	Other varieties, not scheduled, gratuity.				

BLACKCAP,

No. 131.	Gregg, one quart, two premiums			1 00	50
No. 132.	Mammoth Cluster, two premiums			1 00	50
No. 133.	Souhegan, two premiums			1 00	50
No. 134.	Other varieties, not scheduled, gratuity.				

CHERRY.—

No. 135.	Black Eagle, one quart, three premiums		1 50	1 00	50
No. 136.	Black Tartarian, three premiums		1 50	1 00	50
No. 137.	Downer's Late Red, three premiums		1 50	1 00	50
No. 138.	Elton, three preminms		1 50	1 00	50

STRAWBERRY.—

No. 139. Any variety, 24 berries, flat, gratuity.

VEGETABLE.—

Pea,

No. 140.	Champion of England, three premiums	$2 00	1 50	1 00	
No. 141.	Telephone, three premiums	2 00	1 50	1 00	

No. 142.	Stratagem, three premiums	2 00	1 50	1 00	
No. 143.	Other varieties, not scheduled, three premiums	2 00	1 50	1 00	
	CABBAGE,				
No. 144.	Any variety, 3 specimens, four premiums	2 00	1 50	1 00	50
	POTATO,				
No. 145.	Any named variety, 12 specimens, four premiums	2 00	1 50	1 00	50
	BEAN,—SNAP—one-half peck.—				
No. 146.	Wax, four premiums	2 00	1 50	1 00	50
No. 147.	Green pod, four premiums	2 00	1 50	1 00	50

Thursday, July 15.

	CUT FLOWERS.—				
No. 148.	Display, not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 149.	Basket, no restrictions, four premiums	3 00	2 00	1 00	50
	PETUNIA.—				
No. 150.	Display, not to exceed 40 vases, one flower in each vase, four premiums	3 00	2 00	1 00	50
	CURRANT.—				
No. 151.	Fay, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 152.	Red Dutch, four premiums	2 00	1 50	1 00	50
No. 153.	Versaillaise, four premiums	2 00	1 50	1 00	50
No. 154.	White Dutch, three premiums		1 50	1 00	50
No. 155.	White Grape, three premiums		1 50	1 00	50
No. 156.	Other varieties, not scheduled, gratuity.				
	RASPBERRY.—				
No. 157.	Brinklé's Orange, one quart, three premiums		1 50	1 00	50
No. 158.	Hornét, three premiums		1 50	1 00	50
No. 159.	Any variety, not scheduled, gratuity.				

VEGETABLE.—

	CABBAGE,				
No. 160.	Brunswick, 3 specimens, three premiums	$1 50	1 00	50	
No. 161.	Henderson, three premiums	1 50	1 00	50	

SQUASH,

No. 162. Three Summer Crookneck, three premiums 1 50 1 00 50

TOMATO,

No. 163. Any named variety, three premiums.. 2 00 1 50 1 00

Thursday, July 22.

PHLOX DRUMMONDI.—

No. 164. Display, not to exceed 30 vases, four premiums.....$3 00 2 00 1 00 50

HOLLYHOCK.—

No. 165. Not to exceed twenty vases, one bloom in each, four premiums.. 3 00 2 00 1 00 50

SWEET PEA,—WITHOUT FOLIAGE.—

No. 166. Display, not to exceed 40 vases, not exceeding ten flower stems in a vase, six premiums.....$3 00 2 50 2 00 1 50 1 00 50

BLACKBERRY.—

No. 167. Agawam, one quart, three premiums.... 1 50 1 00 50

No. 168. Early Harvest, three premiums..... 1 50 1 00 50

GOOSEBERRY.—

No. 169. One quart, of any named variety, gratuity.

PEAR.—

No. 170. D'Eté, three premiums..... .....$1 50 1 00 50

VEGETABLE.—

BEAN—(shell),

No. 171. Dwarf Horticultural, half peck, four premiums..... .....$2 00 1 50 1 00 50

No. 172. Any other (named) variety, four premiums..... . 2 00 1 50 1 00 50

CORN,

No. 173. (Sweet), four premiums 2 00 1 50 1 00 50

POTATO,—12 specimens.

No. 174. Hebron, three premiums 1 50 1 00 50

No. 175. Polaris, three premiums..... 1 50 1 00 50

No. 176. Rose, three premiums..... 1 50 1 00 50
No. 177. Any other variety, not scheduled, three premiums..... 1 50 1 00 50

Thursday, July 29.

CUT FLOWERS,—DISTINCT VARIETIES.—
No. 178. Twenty blooms, clusters, sprays, stems, or spikes, in vases, four premiums $3 00 2 00 1 00 50

CLEMATIS.—
No. 179. Display, in vases, three premiums.... 3 00 2 00 1 00

NATIVE FLOWERS.—
No. 180. Display in vases, no duplicates, six premiums 3 00 2 50 2 00 1 50 1 00 50

BASKET,—NO RESTRICTIONS.—
No. 181. AMATEUR,—four premiums..... 3 00 2 00 1 00 50
No. 182. FLORIST,—four premiums..... 3 00 2 00 1 00 50

APPLE.—
No. 183. Tetofsky,—three premiums..... 1 50 1 00 50
No. 184. Any other variety, gratuity.

PEAR.—
No. 185. Any variety, not scheduled, gratuity.

BLACKBERRY.—
No. 186. Snyder, one quart, three premiums. ...$1 50 1 00 50
No. 187. Wachusett, three premiums..... 1 50 1 00 50
No. 188. Other varieties, not scheduled, gratuity.

VEGETABLE.—

CORN,
No. 189. Crosby, four premiums $2 00 1 50 1 00 50

CUCUMBER,
No. 190. Three specimens, three premiums..... 1 50 1 00 50

TOMATO,
No. 191. Acme, three premiums..... 1 50 1 00 50

August Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums....$3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D.

Thursday, August 5.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ANTIRRHINUM,—SNAP DRAGON.—

No. 192.	In vases, no duplicates, not to exceed three branches in a vase, four premiums	$2 00	1 50	1 00	50

GERMAN STOCKS.—

No. 193.	In vases, no duplicates, not to exceed three branches in a vase, four premiums	3 00	2 00	1 00	50

CHINA PINK.—

No. 194.	Collection, not to exceed 40 vases, no duplicates, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 195.	Astrachan, four premiums	2 00	1 50	1 00	50
No. 196.	Sweet Bough, four premiums	2 00	1 50	1 00	50

PEAR.—

No. 197.	Giffard, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 198. Any variety, gratuity.

VEGETABLE.—

CORN,

No. 199.	Any variety, three premiums	$1 50	1 00	50	

SQUASH,

No. 200.	Orange Marrow, three specimens, three premiums	1 50	1 00	50	
No. 201.	Summer Crookneck, three specimens, three premiums	1 50	1 00	50	

TOMATO,

No. 202.	Livingston's Perfection, three premiums.	1 50	1 00	50	

Thursday, August 12.

CUT FLOWERS.—

No. 203.	Not to exceed 30 vases, four premiums	$3 00	2 00	1 00	50

GLADIOLUS.—

No. 204.	Twenty vases, one spike in each, four premiums	3 00	2 00	1 00	50

SALPIGLOSSIS.—

No. 205.	Not to exceed 20 vases, four premiums	2 00	1 50	1 00	50

APPLE.—

No. 206.	Oldenburg, four premiums	$2 00	1 50	1 00	50
No. 207.	Yellow Transparent, three premiums		1 50	1 00	50
No. 208.	Any variety, not scheduled, gratuity.				

PEAR.—

No. 209.	Clapp, five premiums	3 00	2 00	1 50	1 00	50

PEACH.—

No. 210.	Alexander, three premiums		1 50	1 00	50
No. 211.	Beatrice, three premiums		1 50	1 00	50
No. 212.	Rivers, three premiums		1 50	1 00	50

VEGETABLE.—

BEAN,

No. 213.	Goddard, half-peck, in pods, three premiums		1 50	1 00	50
No. 214.	Pole, any variety, three premiums		1 50	1 00	50
No. 215.	Pole (string), three premiums		1 50	1 00	50

SQUASH,

No. 216.	Marrow, three specimens, three premiums		1 50	1 00	50

TOMATO,

No. 217.	Beauty, three premiums		1 50	1 00	50

Thursday, August 19.

ASTER.—

No. 218.	Comet, 20 vases, one bloom in each, three premiums		2 00	1 00	50
No. 219.	Victoria, 30 vases, one bloom in each, four premiums	3 00	2 00	1 00	50
No. 220.	POMPON, not to exceed 30 vases, one spray of not more than six blooms in each vase, four premiums	3 00	2 00	1 00	50
No. 221.	TRUFFAUT, — PÆONY - FLOWERED, not to exceed 30 vases, one bloom in each vase, four premiums	3 00	2 00	1 00	50
No. 222.	Any other variety than the above, not to exceed 20 vases, one bloom in each, three premiums.		2 00	1 00	50

GLADIOLUS.—

No. 223. Twenty vases, one spike in each, four premiums..... ..... 3 00 2 00 1 00 50

PHLOX—PERENNIAL.

No. 224. Twenty vases, one head in each, five premiums..... 3 00 2 00 1 50 1 00 50

APPLE.—

No. 225. Somerset, four premiums.....$2 00 1 50 1 00 50

No. 226. Williams, four premiums..... 2 00 1 50 1 00 50

PEAR.—

No. 227. Rostiezer, three premiums..... 1 50 1 00 50

No. 228. Tyson, three premiums..... 1 50 1 00 50

PEACH.—

No. 229. Amsden, three premiums..... 1 50 1 00 50

VEGETABLE.—

BEAN—(HALF-PECK IN POD).—

No. 230. Horticultural (pole), three premiums...$1 50 1 00 50

TURNIP,

No. 231. Purple top, flat, three premiums..... 1 50 1 00 50

CORN,

No. 232. (Sweet), Twelve ears, not less than 12 rows, three premiums..... 1 50 1 00 50

Thursday, August 26.

SCABIOSA.—

No. 233. Collection not to exceed 20 vases, not exceeding six flowers in a vase, four premiums.....$3 00 2 00 1 00 50

ZINNIA.—

No. 234. Collection not to exceed 24 vases, at least 12 varieties, one flower in a vase, four premiums 3 00 2 00 1 00 50

LILIUM SPECIOSUM.—

No. 235. Twelve vases, four premiums.... 3 00 2 00 1 00 50

SWEET PEA,—WITHOUT FOLIAGE.—

No. 236. Display, not to exceed 40 vases, not exceeding 10 flower stems in a vase, six premiums..... 3 00 2 50 2 00 1 50 1 00 50

BEGONIA—(Tuberous Rooted).—

No. 237.	Display, not to exceed 24 vases, five premiums	4 00	3 00	2 00	1 00	50

APPLE.—

No. 238.	Golden Sweet, three premiums	1 50	1 00	50	
No. 239.	Sour Bough, three premiums	1 50	1 00	50	
No. 240.	Any other variety, not scheduled, gratuity.				

APPLE—(Crab).—

No. 241.	Transcendent, 24 specimens, three premiums	1 50	1 00	50	

PEAR.—

No. 242.	Assomption, three premiums	1 50	1 00	50	
No. 243.	Petite Marguerite, three premiums	1 50	1 00	50	

PEACH.—

No. 244.	Cooledge, four premiums	2 00	1 50	1 00	50
No. 345.	Foster, four premiums	2 00	1 50	1 00	50
No. 246.	George IV., four premiums	2 00	1 50	1 00	50
No. 247.	Other varieties, not scheduled, gratuity.				

PLUM.—

No. 248.	Bradshaw, four premiums	2 00	1 50	1 00	50
No. 249.	McLaughlin, four premiums	2 00	1 50	1 00	50
No. 250.	Washington, four premiums	2 00	1 50	1 00	50
No. 251.	Japanese, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

Lima Bean,

No. 252.	Large half-peck, four premiums	$2 00	1 50	1 00	50

Cauliflower,

No, 253.	Three specimens, three premiums	2 00	1 50	1 00	

Tomato,

No. 254.	Any variety, not scheduled, three premiums	1 50	1 00	50	

Squash,

No. 255.	Any variety, three specimens, four premiums	2 00	1 50	1 00	50

September Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums.... $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D.

Thursday, September 2.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 256.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
	BOUQUET—(PARLOR).—				
No. 257.	Amateur,—four premiums	3 00	2 00	1 00	50
No. 258.	Florist,—four premiums	3 00	2 00	1 00	50
	DAHLIA.—				
	Large Flowered,				
No. 259.	Not to exceed 20 vases, one flower in each, four premiums	3 00	2 00	1 50	50
	Pompon,				
No. 260.	Not to exceed 20 vases, one spray in each, four premiums	3 00	1 00	1 00	50
	NASTURTIUM OR TROPÆOLUM.				
No. 261.	Not to exceed 24 vases, not more than six blooms in each vase, four premiums	3 00	2 00	1 00	50
	VERBENA.—				
No. 262.	Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50
	ASTER,—SEMPLES.—				
No. 263.	Vase of 20 blooms, four premiums	2 00	1 50	1 00	50
	APPLE.—				
No. 264.	Gravenstein, four premiums	$2 00	1 50	1 00	50
No. 265.	Worcester Spy, three premiums		1 50	1 00	50
No. 266.	Other varieties, not scheduled, gratuity.				
	PEAR.—				
No. 267.	Ansault, three premiums		1 50	1 00	50
No. 268.	Earle's Bergamot, three premiums		1 50	1 00	50
No. 269.	St. Ghislain, three premiums		1 50	1 00	50
	PEACH.—				
No. 270.	Crawford (Early), four premiums	2 00	1 50	1 00	50
	PLUM.—				
No. 271.	Gen. Hand, four premiums	2 00	1 50	1 00	50
No. 272.	Imperial Gage, four premiums	2 00	1 50	1 00	50
No. 273.	Victoria, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

CUCUMBER—for pickles,

No. 274. Half-peck, three premiums.....$1 50 1 00 50

CORN,

No. 275. (Sweet), 12 ears, of not less than 12 rows, three premiums..... 1 50 1 00 50

PEPPER.—

No. 276. Large Bell, 12 specimens, three premiums..... 1 50 1 00 50

No. 277. Squash, 12 specimens, three premiums.. 1 50 1 00 50

Thursday, September 9.

CUT FLOWERS.—DISTINCT VARIETIES.—

No. 278. Not to exceed 20 vases, four premiums :.....$3 00 2 00 1 00 50

GERANIUM.—

No. 279. Display, not to exceed 24 vases, one truss in a vase, four premiums..... . 3 00 2 00 1 00 50

PANSY, WITHOUT FOLIAGE.—

No. 280. Collection not to exceed 30 vases, one stem in each vase, four premiums....: 3 00 2 00 1 00 50

DAHLIA,—SINGLE.—

No. 281. Not to exceed 20 vases, one spray in each, three premiums..... 1 50 1 00 50

GLADIOLUS.—

No. 282. Display, not to exceed 30 vases, four premiums..... 3 00 2 00 1 00 50

APPLE.—

No. 283. Foundling, three premiums.....$1 50 1 00 50

No. 284. Holden, three premiums..... 1 50 1 00 50

No. 285. Wealthy, three premiums..... 1 50 1 00 50

PEAR.—

No. 286. Bartlett, five premiums... 3 00 2 00 1 50 1 00 50

No. 287. Lucrative, three premiums..... 1 50 1 00 50

No. 288. Other varieties, not scheduled, gratuity.

PLUM.—

No. 289.	Fellenberg, four premiums	2 00	1 50	1 00	50
No. 290.	Jefferson, four premiums.....	2 00	1 50	1 00	50
No. 291.	Lombard, four premiums	2 00	1 50	1 00	50
No. 292.	Monroe, four premiums.....	2 00	1 50	1 00	50
No. 293.	Quackenboss, four premiums....	2 00	1 50	1 00	50
No. 294.	Japanese, four premiums.....	2 00	1 50	1 00	50
No. 295.	Moore's Arctic, four premiums..	2 00	1 50	1 00	50

PEACH.—

No. 296.	Oldmixon, four premiums.....	2 00	1 50	1 00	50

GRAPE.—

No. 297.	Green Mountain, three clusters, three premiums....		1 50	1 00	50
No. 298.	Moore, three premiums.....		1 50	1 00	50

MELON.—

No. 299.	Green Flesh, three specimens, four premiums	2 00	1 50	1 00	50
No. 300.	Yellow Flesh, four premiums ...	2 00	1 50	1 00	50
	WATER,				
No. 301.	Three specimens, three premiums.....		1 50	1 00	50

VEGETABLE. –

	CABBAGE,				
No. 302.	Brunswick, three specimens, three premiums.....		$1 50	1 00	50
	CELERY,				
No. 303.	Six specimens, any variety named, three premiums		2 00	1 00	50

Thursday, September 16.

ASTER.—

No. 304.	Not to exceed 30 vases, four premiums.....	$3 00	2 00	1 00	50

CUT FLOWERS.—(BASKET).—No restrictions.

No. 305.	AMATUER,—four premiums.. ...	3 00	2 00	1 00	50
No. 306.	FLORIST,—four premiums.....	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 307.	Not to exceed 24 vases, four premiums..... ..	3 00	2 00	1 00	50

APPLE.—

No. 308.	Gravenstein, five premiums	$3 00	2 00	1 50	1 00	50
No. 309.	Maiden's Blush, three premiums		1 50	1 00	50
No. 310.	Porter, three premiums		1 50	1 00	50
No. 311.	Washington Strawberry, four premiums		2 00	1 50	1 00	50

APPLE,—CRAB.

No. 312.	Hyslop, 24, three premiums		1 50	1 00	50

PEAR.—

No. 313.	Hardy, three premiums		1 50	1 00	50
No. 314.	Durandeau, three premiums		1 50	1 00	50
No. 315.	Paradis d'Automne, three premiums		1 50	1 00	50
No. 316.	Other varieties, not scheduled, gratuity.				

PEACH.—

No. 317.	Crawford (late), four premiums	2 00	1 50	1 00	50
No. 318.	New Seedling, originated in Worcester County, four premiums	2 00	1 50	1 00	50
No. 319.	Stump the World, four premiums	2 00	1 50	1 00	50
No. 320.	Other varieties, not scheduled, gratuity.				

PLUM.—

No. 321.	Coe's Golden Drop, four premiums	2 00	1 50	1 00	50
No. 322.	Pond's Seedling, four premiums	2 00	1 50	1 00	50
No. 323.	Reine Claude de Bavay, four premiums	2 00	1 50	1 00	50

GRAPE.—

No. 324.	Brighton, three clusters, three premiums		1 50	1 00	50
No. 325.	Lindley, three premiums		1 50	1 00	50
No. 326.	Massasoit, three premiums		1 50	1 00	50
No. 327.	Worden, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

CARROT,

No. 328.	Any variety, three premiums		$1 50	1 00	50

EGG PLANT,

No. 329.	Three specimens, three premiums		1 50	1 00	50

CABBAGE,

No. 330.	Red, three specimens, three premiums		1 50	1 00	50
No. 331.	Savoy, three premiums		1 50	1 00	50

CAULIFLOWER,

No. 332.	Three specimens, four premiums	2 00	1 50	1 00	50

Thursday, September 23.

CUT FLOWERS.—

No. 333.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 334.	Floral Designs, in any form, other than Baskets, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 335.	American Beauty, three premiums	$1 50	1 00	50	
No. 336.	Lyscom, three premiums	1 50	1 00	50	
No. 337.	McLellan, three premiums	1 50	1 00	50	
No. 338.	Mother, three premiums	1 50	1 00	50	
No. 339.	Twenty-Ounce, three premiums	1 50	1 00	50	
No. 340.	Holland Pippin, three premiums	1 50	1 00	50	

PEAR.—

No. 341.	Louise Bonne de Jersey, four premiums	2 00	1 50	1 00	50
No. 342.	Seckel, five premiums	3 00	2 00	1 50	1 00	50
No. 343.	Superfin, three premiums.	1 50	1 00	50	
No. 344.	Urbaniste, three premiums.	1 50	1 00	50	
No. 345.	Washington, three premiums	1 50	1 00	50	

PEACH.—

No. 346. Any variety, gratuity.

GRAPE.—

No. 347.	Barry, three clusters, three premiums	1 50	1 00	50	
No. 348.	Concord, four premiums	2 00	1 50	1 00	50
No. 349.	Delaware, four premiums	2 00	1 50	1 00	50
No. 350.	Iona, three premiums	1 50	1 00	50	
No. 351.	Merrimac, three premiums	1 50	1 00	50	
No. 352.	Niagara, three premiums	1 50	1 00	50	
No. 353.	Pocklington, three premiums	1 50	1 00	50	
No. 354.	Salem, three premiums	1 50	1 00	50	
No. 355.	Wilder, three premiums	1 50	1 00	50	

No. 356. Any variety, not scheduled, gratuity.

VEGETABLE.—

No. 357.	Collection, not exceeding 25 varieties, four premiums	$8 00	6 00	4 00	2 00

Thursday, September 30.

CUT FLOWERS.—

No. 358.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 359.	Native Flowers in vases, no duplicates, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 360.	Coggswell, three premiums		$1 50	1 00	50
No. 361.	Fameuse, three premiums		1 50	1 00	50
No. 362.	Hubbardston, four premiums	2 00	1 50	1 00	50
No. 363.	McIntosh, four premiums	2 00	1 50	1 00	50
No. 364.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 365.	Bosc, six premiums.	4 00	3 00	2 00	1 50	1 00	50
No. 366.	Sheldon, six premiums	4 00	3 00	2 00	1 50	1 00	50
No. 367.	Other varieties, not scheduled, gratuity.						

GRAPE,—OPEN CULTURE.—

No. 368. Any variety, three clusters, gratuity.

QUINCE,—Twelve specimens.

No. 369.	Champion, four premiums	2 00	1 50	1 00	50
No. 370.	Orange, five premiums	3 00	2 00	1 50	1 00	50
No. 371.	Other varieties, gratuity.				

VEGETABLE.—

POTATO,

No. 372.	Six varieties (named), 12 specimens of each, four premiums	$3 00	2 00	1 50	1 00

SQUASH,—Three specimens.

No. 373.	Essex-Hybrid, four premiums	2 00	1 50	1 00	50
No. 374.	Warren, four premiums	2 00	1 50	1 00	50
No. 375.	Any variety, not scheduled, three premiums		1 50	1 00	50

CELERY,—Six specimens.

No. 376.	Paris Golden, four premiums	2 00	1 50	1 00	50
No. 377.	White Plume, four premiums	2 00	1 50	1 00	50

Thursday, October 7.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 378.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50

FERNS,—IN POTS.—

No. 379.	Collection, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 380.	Belleflower, four premiums	$2 00	1 50	1 00	50
No. 381.	Leicester Sweet, three premiums		1 50	1 00	50
No. 382.	Sutton Beauty, three premiums		1 50	1 00	50
No. 383.	Tompkins King, five premiums	3 00	2 00	1 50	1 00	50
No. 384.	Other varieties, named, not scheduled, gratuity.				

PEAR.—

No. 385.	Dix, three premiums		1 50	1 00	50
No. 386.	Frederick Clapp, three premiums		1 50	1 00	50
No. 387.	Marie Louise, three premiums		1 50	1 00	50
No. 388.	Onondaga, three premiums		1 50	1 00	50

GRAPE.—

No. 389.	Diana, three clusters, three premiums		1 50	1 00	50

VEGETABLE.—

ONION,

No. 390.	Red Globe, twelve, three premiums	$1 50	1 00	50	
No. 391.	Yellow Globe Danvers, three premiums		1 50	1 00	50

SALSIFY,

No. 392.	Three premiums		1 50	1 00	50

SQUASH,

No. 393.	Hubbard, three specimens, four premiums	2 00	1 50	1 00	50

ENDIVE,

No. 394.	Six specimens, three premiums		1 50	1 00	50

Thursday, October 14.

CUT FLOWERS.—

No. 395. In any form, gratuity.

APPLE.—

No. 396.	Fallawater, three premiums	$1 50	1 00	50		
No. 397.	Peck, three premiums	1 50	1 00	50		
No. 398.	Pound Sweet, three premiums	1 50	1 00	50		
No. 399.	R. I. Greening, five premiums	3 00	2 00	1 50	1 00	50
No. 400.	Other varieties, not scheduled, gratuity.					

PEAR.—

No. 401.	Anjou, six premiums	4 00	3 00	2 00	1 50	1 00	50
No. 402.	Comice, six premiums	4 00	3 00	2 00	1 50	1 00	50

VEGETABLE.—

SQUASH,

No. 403.	Bay State, three specimens, four premiums	$2 00	1 50	1 00	50

PARSLEY,

No. 404.	Half-peck, three premiums	1 50	1 00	50	

TURNIP,

No. 405.	Purple Top Globe, three premiums	1 50	1 00	50	

WHITE EGG,

No. 406.	Three premiums	1 50	1 00	50	

BRUSSELS SPROUTS,

No. 407.	Half-peck, three premiums	1 50	1 00	50	

Thursday, October 21.

POT PLANTS,—IN BLOOM.—

No. 408.	Display, five premiums	$4 00	3 00	2 00	1 50	1 00

CUT FLOWERS,—IN ANY FORM.—

No. 409. Gratuity.

APPLE.—

No. 410.	Baldwin, six premiums	$4 00	3 00	2 00	1 50	1 00	50

No. 411.	Canada Red (Old Nonesuch), three premiums			1 50	1 00	50
No. 412.	Russet, sweet, three premiums			1 50	1 00	50
No. 413.	Golden Russet of Mass., three premiums.			1 50	1 00	50
No. 414.	Lemon Greening, three premiums			1 50	1 00	50
No. 415.	McIntosh, five premiums	3 00	2 00	1 50	1 00	50
No. 416.	Northern Spy, five premiums	3 00	2 00	1 50	1 00	50
No. 417.	Palmer, five premiums	3 00	2 00	1 50	1 00	50
No. 418.	Roxbury Russet, four premiums	2 00	1 50	1 00		50
No. 419.	Collection, not to exceed ten varieties, four premiums	4 00	3 00	2 00	1 00	

PEAR.—

No. 420.	Angoulême, three premiums			1 50	1 00	50
No. 421.	Clairgeau, three premiums			1 50	1 00	50
No. 422.	Dana's Hovey, five premiums	3 00	2 00	1 50	1 00	50
No. 423.	Josephine de Malines, three premiums			1 50	1 00	50
No. 424.	Langelier, three premiums			1 50	1 00	50
No. 425.	Lawrence, six premiums	4 00	3 00	2 00	1 50	1 00	50
No. 426.	Winter Nelis, three premiums			1 50	1 00	50

VEGETABLE.—

CELERY,—Six specimens.—

No. 427.	Boston Market, four premiums	3 00	2 00	1 00	50	
No. 428.	Giant Pascal, four premiums	3 00	2 00	1 00	50	
No. 429.	Any variety, not scheduled, four premiums	3 00	2 00	1 00	50	

TURNIP,—Six specimens.

No. 430.	White Swede, three premiums			1 50	1 00	50
No. 431.	Yellow Swede, three premiums			1 50	1 00	50

PARSNEP,—

No. 442.	Three premiums			1 50	1 00	50

CHRYSANTHEMUM.

FOURTEENTH ANNUAL EXHIBITION.

Tuesday, Wednesday and Thursday, November 9th, 10th and 11th, A. D. 1897.

SPECIAL RULES.

1. Exhibitors will add value to their exhibits by having all specimens correctly and legibly named, notice of which will be taken by the Judge in awarding the premiums.

2. While it is expected that Exhibitors will take pains to name their exhibits correctly, the Judge will not exclude a competitor for mistake in nomenclature.

[N. B. All the specimens placed in competition must have been owned and grown by the competitor three months.]

The Society offers the following premiums, open to competition by any one, subject to the following rule :—

Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are not members of the Society; and it is strictly required that all specimens offered for premium shall have been owned and grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least three months previous to the date of exhibition.

No. 1. For the best twelve plants, large flowered, in not over ten in. pots, distinct named varieties, four premiums $10 00 8 00 6 00 4 00

No. 2. For the best six plants, large flowered, in not over ten in. pots, distinct named varieties, four premiums $5 00 4 00 3 00 2 00

No. 3. For the best three plants, large flowered, in not over ten in. pots, distinct named varieties, four premiums $4 00 3 00 2 00 1 00

No. 4. For the best specimen plant, large flowered, White, in not over ten in. pot, four premiums .....
$3 00 2 00 1 50 1 00

No. 5. For the best Yellow, as above, four premiums .....
$3 00 2 00 1 50 1 00

No. 6. For the best Red, as above, four premiums.....
$3 00 2 00 1 50 1 00

No. 7. For the best Pink, as above, four premiums .....
$3 00 2 00 1 50 1 00

No. 8. For best Vase of 25 Cut Blooms, large flowered, long stems, White, four premiums .....
$10 00 7 00 5 00 3 00

No. 9. For best Vase of 25 Cut Blooms, large flowered, long stems, Pink, four premiums.....
$10 00 7 00 5 00 3 00

No. 10. For best Vase of 25 Cut Blooms, large flowered, long stems, Yellow, four premiums.....
$10 00 7 00 5 00 3 00

No. 11. For Vase of not to exceed twelve White Blooms, four premiums,.....$5 00 4 00 3 00 2 00

No. 12. For Vase of not to exceed twelve Yellow Blooms, four premiums $5 00 4 00 3 00 2 00

No. 13. For Vase of not to exceed twelve Pink Blooms, four premiums $5 00 4 00 3 00 2 00

No. 14. For Vase of not to exceed twelve Blooms, mixed varieties, four premiums.....$5 00 400 3 00 2 00

No. 15. For twelve Sprays, distinct named, large flowering, in vases, four premiums.... $4 00 3 00 2 00 1 00

No. 16. For twelve Cut Blooms, distinct named, with long stems and foliage, in vases, four premiums.....
$6 00 4 00 3 00 2 00

No. 17. For six Cut Blooms, as above, four premiums.....
$3 00 2 00 1 50 1 00

N. B. Exhibitors competing in both Nos. 16 and 17 must not duplicate.

No. 18. For the best single bloom, White, three premiums..
$2 00 1 00 50

No. 19. For the best single bloom, Pink, three premiums...
$2 00 1 00 50

No. 20. For the best single bloom, Yellow, three premiums..
$2 00 1 00 50

No. 21. For best display of distinct named varieties of Pompon Chrysanthemums, one spray in a vase, four premiums $4 00 3 00 2 00 1 00

No. 22. MANTEL DECORATIONS. For best Decorated Mantel, four premiums..... $10 00 7 00 5 00 3 00

No. 23. CARNATIONS. For best display, in vases, four premiums $5 00 4 00 3 00 2 00

No. 24. ROSES. For best display, in vases, four premiums.. $8 00 6 00 4 00 2 00

No. 25. DECORATIVE PLANTS. For best collection, four premiums $10 00 8 00 6 00 4 00

No. 26. PALM. For best, three premiums..... $3 00 2 00 1 00

No. 27. FERN. For best, three premiums $2 00 1 00 50

Entries for Mantel Decorations must be made with the Secretary one week in advance of November 10th.

The exhibition of Mantel Decorations will open at 2 P. M., Wednesday, November 10th.

The General Rules and Regulations of the Society will be in force wherever applicable. Copies will be mailed to intending competitors upon application to the Secretary of the Society.

☞This Exhibition will be open to the public from 3 P. M. until 9 P. M., Tuesday, Nov. 9th, and from 9 A. M. until 9 P. M., Wednesday and Thursday.

N. B. Exhibitors are requested to make their entries the week previous. All articles intended for this Exhibition must be in the Hall, and ready for inspection by the Judge, by 1 o'clock P. M., precisely, of the 9th.

The charge for admission will be 25 cents.

ADIN A. HIXON,

Secretary, 18 Front Street.

Annual Meeting, Wednesday, Nov. 3, 1897.

OFFICERS AND COMMITTEES
OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1896-97.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Edward L. Davis,	Worcester.
Henry Woodward,	"	Henry Reed,	"
John B. Bowker,	"	Henry Phelps,	"
B. W. Potter,	"	Freeman M. Marble,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	Lewis A. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward.	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"	Mrs. T. A. Dawson,	"
Fred. H. Chamberlain,	"	Frederick B. Madaus,	"
William J. Wood,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

George E. Francis, 1899. Nathaniel Paine, 1898. Henry L. Parker, 1897.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, Joseph Jackson.

ON NOMENCLATURE:

Henry L. Parker, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, F. M. Marble, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

O. B. Hadwen, *Chairman.*

Frederick A. Blake,	Henry L. Parker,	Charles Greenwood,
Edward Hall,	James Draper,	Calvin L. Hartshorn,
Albert H. Lange,	A. J. Marble,	Simon E. Fisher,
Mrs. F. H. Merrifield,	George C. Rice,	Herbert R. Kinney,
William J. Wood,		

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.:	ON FRUITS, ETC.:	VEGETABLES:
William J. Wood.	Henry Phelps.	Charles Greenwood.

ROLL OF MEMBERS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

JULY 1, 1897.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
1897.

ROLL OF MEMBERS

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY.

By the term "Date," it is meant to comprise all the accessions of members from the original foundation of the Society. Where no numerals appear in that column, it is to be understood that the members, opposite whose names there are no figures, were entered upon the Roll of the Society previous to and coeval with the "List of Members," which was published in the "Transactions of The Worcester County Horticultural Society for the years 1852 and 1853."

Those members whose names are marked with a star (*) are dead.

A.

Date.	*Name.*	*Residence.*
	Adams, R. W.	Barre.
	Aldrich, Paine*	Worcester.
	Allen, W. E.*	"
	Allen, Rev. George*	"
	Allen, Hon. Charles*	"
	Allen, Samuel*	"
	Allen, James Frank*	"
	Armsby, J. M. C.*	"
	Angier, Roswell P.*	Toledo, O.
	Allen, Silas*	Shrewsbury.
	Allen, Lucius S.*	Worcester.
	Allen, Jonas H.	Shrewsbury.
	Allen, Asa H.*	"
	Allen, Rev. Joseph*	Northboro.
	Adams, Otis*	Grafton.
	Armsby, Lewis*	Northbridge.
	Allen, Rev. T. P.*	Sterling.
1855	Allen, Alvan*	Worcester.
1855	Allen, Mrs. Mary Ann*	"
1856	Allen, Benj. D.	"
1859	Aldrich, P. Emory*	"
1866	Adams, George A.*	"
1866	Allen, Mrs. Charles L.*	"
1867	Adams, John C.	"
1867	Armsby, Miss Ella A.	"
1867	Armsby, George F.	"
1870	Abbott, Ebenezer E.*	"
1870	Andrews, S. C.*	"
1871	Allen, Miss Lizzie G.	"
1872	Ames, Edwin	"

A.

Date.	*Name.*	*Residence.*
1876	Adams, John*	Worcester.
1879	Arnold, Samuel A.	"
1880	Abbott, Rogers A.	"
1886	Abbott, Justin A.	"
1891	Allen, William I.	"
	Allen, Hugh J.	"
1893	Alexander, Francis P.	"
1894	Andrews, George B., M. D.*	Fitchburg.
	Allen, Elizabeth J.	Worcester.
	Atherton, Mary E.	"
	Andrews, Albert Willard	"
	Allen, Joseph Albert	Auburn.
1897	Adams, Erastus	No. Grafton.

B.

Date.	*Name.*	*Residence.*
	Bancroft, Tim. W.*	Worcester.
	Boland, Tobias*	"
	Bickford, William M.*	"
	Bigelow, Lewis*	"
	Bradley, Osgood*	"

B.

Date.	Name.	Residence.
	Bowen, George*	Worcester.
	Burnside, Saml. M.*	"
	Bancroft, Charles P.	"
	Bullock, Alexander H.*	"
	Brown, Albert*	"
	Barton, Hon. Ira M.*	"
	Brown, William*	"
	Barbour, William C.*	"
	Blood, Oliver H., M. D.*	"
	Barnard, Ebenezer L.*	"
	Boyden, Joseph*	"
	Bowen, Ebenezer H.*	"
	Bigelow, Walter*	"
	Ball, Richard*	"
	Bartlett, Stephen*	"
	Barrows, William	"
	Burbank, John G.*	"
	Bates, George A., M. D.*	"
	Bowen, Charles*	"
	Bigelow, Walter, Jr.*	"
	Breck, Moses T.*	"
	Buffum, Benjamin*	"
	Berry, Zebina E.*	"
	Bates, H. G.	"
	Barton, William S.	"
	Barnard, John*	"
	Baylies, A.*	"
	Brooks, A. J.	Harvard.
	Burbank, James L.*	Worcester.
	Barker, William*	"
	Bond, Joseph*	"
	Bond, Jeremiah E.	"
	Banister, Emory*	"
	Blake, James B.*	"
	Bancroft, Mary C.	"
	Banning, E. M.*	"
	Butman, Benjamin*	"
	Butman, Sarah L.	"
	Bigelow, Walter R.*	"
	Beach, Lucius	"
	Briggs, Joseph*	"
	Blood, Mrs. O. H.*	"
	Bigelow, Charles*	Grafton.
	Brigham, E. L.	Worcester.
	Barnes, Artemas*	Berlin.
	Bisco, Dwight*	Leicester.
	Bottomly, Thomas*	"
	Bottomly, Booth*	"
	Brummett, Luke*	"
	Burr, Heman M.*	"
	Brooks, John*	Princeton.
	Banks, Thomas S.	Brookline.
	Boynton, John*	Templeton.
	Bowman, Charles D.*	Oxford.
	Boyd, John*	Shrewsbury.
	Burt, Ellis*	Douglas.
	Batcheller, Elhanan*	Sutton.
	Bowman, Jos.*	New Braintree.

B.

Date.	Name.	Residence.
	Ball, D.*	Spencer.
	Biscoe, Thos. C.	Grafton.
	Brigham, Charles	"
	Bates, Joseph N.*	Worcester.
	Babbitt, Pliny H.*	Barre.
	Buckley, Wm. T.*	Worcester.
	Bond, Thomas	No. Brookfield.
	Burrage, Leonard	Leominster.
	Banister, Mrs. Emory*	Worcester.
1853	Burbank, George G.*	"
1853	Barnard, George A.	"
1853	Bangs, Mrs. Mary G.*	"
1853	Bemis, Merrick	"
1855	Billing, Aaron*	"
1855	Brooks, J. H.	"
1855	Boyden, John*	"
1855	Bentley, Geo. W.	"
1855	Bryant, Mrs. E.	"
1856	Bigelow, George C.*	"
	Butman, George F.*	"
1858	Bull, Trumbull*	Grafton.
1859	Brown, Alzirus	Worcester.
1859	Ball, Phinehas*	"
1860	Barnard, Mrs. E. L.	"
1860	Batchelder, Ezra D.*	North Brookfield.
1862	Barton, George S.*	Worcester.
1863	Burgess, Daniel S.*	"
1863	Brown, Mrs. Jonas,*	Wilkinsonville.
1863	Bertody, Miss M. F.	Leicester.
1864	Barber, Miss R. E.	Worcester.
1864	Brown, Jonas*	Wilkinsonville.
1864	Brooks, Mrs. C. E.	Worcester.
1864	Banister, Miss Emma	"
1864	Burbank, Asa L.	"
1864	Barber, George*	"
1865	Barber, Mrs. George*	"
1865	Baker, Zephaniah*	Worcester.
1865	Bigelow, Luther H.*	"
1865	Bent, Charles M.	"
1865	Brown, George A.	"
1865	Burbank, Mrs. Geo. G.	"
1865	Burbank, Miss Carrie A.	"
1865	Burgess, Mrs. Danl. S.	"
1865	Bancroft, Mrs. Mary M.	"
1865	Bacon, Mrs. John E.*	"
1865	Barnard, Miss Caroline*	"
1865	Boyden, Elbridge	"
1866	Boswell, Mrs. Annie E.	"
1866	Bennett, Mrs. Sarah F.	"
1866	Brimhall, Silas J.*	"
1866	Baker, Jacob,	Dudley.
1866	Baker, Mrs. Jacob	"
1866	Barrows, A. Herb't	Worcester.
1866	Bennett, James	Leominster.
1866	Bachelor, C. O.	Northbridge.

B.

Date.	Name.	Residence.
1866	Bachelor, Mrs. Chas. O.	Northbridge.
1866	Belcher, Charles*	Worcester.
1866	Brown, Miss Josie E.	Wilkinsonville.
1867	Ballard, John S.*	Worcester.
1867	Bradley, Mrs. Osgood	"
1867	Barton, Mrs. Margaretta L. K.	Worcester.
1867	Bacon, John E.*	"
1867	Baker, Mrs. Z.*	"
1867	Bigelow, Mrs. Luther H.*	"
1868	Bowker, Sewall H.*	"
1870	Baldwin, John S.	"
1870	Barber, Miss Isabella G.	"
1870	Bullock, Mrs. Alex. H.*	"
1870	Bartlett, Mrs. Theo. H.*	"
1873	Barbour, Miss M. Jennie	"
1870	Bullock, Augustus G.	"
1870	Bullock, Miss Isabel H.	"
1870	Bullock, Miss Fanny	"
1871	Bush, William*	"
1871	Bush, Mrs. Isaac	"
1871	Brown, Thomas	"
1871	Blake, Fred. A.	Rochdale.
1872	Buck, Mrs. H. B.	Worcester.
1872	Bigelow, James W.	"
1872	Ballard, Harry	"
1874	Ballard, Edgar	"
1874	Brimhall, Mrs. Silas J.	"
1874	Bassett, D. H.	"
1874	Bruso, Elizabeth F.	"
1874	Bennett, A. H.	Holden.
1876	Bowker, Mrs. S. H.	Worcester.
1876	Ballou, A. A.	Grafton.
1871	Bemis, Daniel W.	Worcester.
1879	Brooks, Charles E.*	"
1880	Ball, Rev. George S.	Upton.
1881	Blood, Jefferson L.*	Worcester.
1882	Brooks, Walter F.	"
1882	Baldwin, Charles C.	"
1882	Babbitt, William E.	"
1883	Brierly, Joseph*	"
1883	Brastow, James B.*	"
1884	Blake, Mrs. C. L.	Rochdale.
1884	Bennett, Miss C. E.	Worcester.
1884	Brooks, Rev. Arthur A.	"
1884	Bartlett, E. A.	Shrewsbury.
1885	Bancroft, Isaac A.*	Worcester.
1886	Brierly, James L.*	"
1887	Bishop, Mrs. John W.	"
1889	Barnard, William C.	"
1890	Burnside, Elizabeth D.	"
	Barr, George L.	"
	Bennett, Ephraim L.	Millbury.
1891	Brierly, Moses F.	Worcester.
1892	Bowker, John B.	"
1893	Bryant, Charles H.	"

B.

Date.	Name.	Residence.
1894	Barton, Samuel R.	North Oxford.
	Ballou, Chas. Allen,	Worcester.
1895	Bryant, Mrs. Christopher	"
	Brown, A. Swan	"
1896	Brackett, Mrs. Frank D.	"
	Boyden, Frederick J.	Leominster.
	Bruce, Edgar M.	"
	Bowen, Mrs. William E.	Worcester.
	Brown, Albert H.	Westboro.
	Book, Hugo,	Worcester.
	Boardman, James E.	Rochdale.

C.

Date.	Name.	Residence.
	Clark, John F.*	Worcester.
	Chandler, George*	"
	Child, Benjamin N.*	"
	Colton, Samuel H.*	"
	Chase, Anthony*	"
	Chapin, Lewis*	"
	Chamberlain, Thomas*	"
	Chickering, C. C.	"
	Chamberlin, Henry H.	"
	Coe, William*	"
	Conant, Edwin*	"
	Chapin, Charles P.*	"
	Chenery, Horace*	"
	Coes, Loring	"
	Comins, D. B.*	"
	Chaffin, T. M.	"
	Curtis, Tyler P.*	"
	Chapin, Henry*	"
	Colton, Mrs. S. H.	"
	Chase, Mrs. Anthony*	"
	Canfield, Mrs. P. S.	"
	Cross, William*	"
	Clark, William C.*	"
	Culver, J. S.*	"
	Coes, Aury G.*	"
	Curtis, Albert	"
	Conklin, Henry W.*	"
	Champney, Samuel P.*	Grafton.

C.

Date.	Name.	Residence.
	Coleman, Charles C.*	Worcester.
	Cook, David W.*	"
	Clark, Henry O.*	"
	Chamberlain, George A.*	"
	Cutting, Jonathan*	Templeton.
	Clapp, John*	Leicester.
	Craig, Leonard*	"
	Cheney, Leonard	Southbridge.
	Capron, William C.*	Uxbridge.
1854	Canfield, Miss P. W. S.	Worcester.
1855	Carter, Rufus	"
1855	Conant, Mrs. Elizabeth*	"
1855	Conant, Miss Elizabeth*	"
1856	Champney, Preston A.*	Sutton.
1856	Champney, Samuel G.*	"
1856	Champney, Susan A.	"
1857	Chase, William M.	Worcester.
1858	Chapman, Isham S.*	"
1862	Clark, John S.*	"
1863	Crompton, George*	"
1863	Comley, James	"
1863	Chase, Nehemiah B.	Wilkinsonville.
1863	Cross, Courtland H.	West Warren.
1863	Crane Hosea*	Millbury.
1863	Clapp, Silas*	Worcester.
1864	Cushing, Rev. S. A.	Shrewsb'y.
1864	Cook, Sumner*	Worcester.
1864	Currier, Augustus N.*	"
1864	Chandler, Miss Fanny	"
1864	Chamberlin, Susan E.*	"
1864	Cook, Nathaniel H.	Bristol, Conn.
1865	Cutter, Calvin, M. D.*	Warren.
1865	Cook, William W.	Worcester.
1865	Curtis, Mrs. Joseph*	"
1865	Clapp, Mrs. Simeon	"
1865	Coes, Frank Loring R.*	"
1865	Chase, Charles A.	"
1865	Chase, Mrs. Charles A.*	"
1865	Clapp, Frederick A.	"
1867	Chamberlain, Mrs. Geo. A.	"
1867	Chase, Joseph*	"
1867	Claflin, John*	"
1867	Clarke, Josiah H.	"
1868	Coe, George F.	Grafton.
1869	Chase, Albert N.	"
1870	Cruickshanks, Geo.	Fitchburg.
1870	Chapin, Miss Annie T.	Worcester.
1871	Chapin, Mrs. Louisa*	"
1872	Carpenter, L. S.	"
1872	Chamberlin, Mrs. H. H.	"
1872	Colton, Mary R.	"
1873	Chaffin, Oscar	"

C.

Date.	Name.	Residence.
1873	Church, Moses*	Worcester.
1875	Coulson, John	"
1875	Chester, Miss Katie D.	"
1875	Cruickshanks, Mrs. Mary E.	Fitchburg.
1876	Coes, Mrs. F. L. R.	Worcester.
1876	Clark, George H.*	"
1878	Colton, Samuel H.	Auburn.
1878	Coes, Chester E. B.	Worcester.
1879	Currier, Elizabeth Dickinson*	Worcester.
1881	Copeland, Amasa A.	"
1883	Curtis, Mrs. James P.	"
1884	Cook, Herbert A.	Shrewsbury.
1884	Comins, Edward I.	Worcester.
1885	Chase, Mrs. H. M.	"
1886	Cowan, Thomas B.	"
1886	Chamberlain, Frank H.*	Hanover, N. H.
	Corey, T. F.	Northboro.
1890	Chadbourne, Alonzo H.	Worcester.
1891	Cochrane, Mrs. Albertina G.	Worcester.
	Cheney, Gustavus A.	"
1892	Chamberlain Frederick H.	"
1894	Clarke, Joseph T.	South Lancaster.
	Curtis, Edwin P.	Worcester.
	Carleton, Elbridge S.	"
	Crane, Ellery Bicknell	"
	Cooper, Charles,	Rochdale.
1895	Coes, Frederick L.	Worcester.
	Cowan, William H.	"
	Coggswell, Mrs. Jennie A.	"
1896	Conant, Mrs. Abbie S.	Cherry Valley.
	Condon, Mrs. Albert O.	Worcester.
	Clark, Mrs. Willis H.	"

D.

Date.	Name.	Residence.
	Davis, Hon. John*	Worcester.
	Draper, William A.*	"
	Dorr, Enos*	"

D.

Date.	Name.	Residence.
	Darling, Loron	Worcester.
	Dickinson, William*	"
	Davis, Hon. Isaac*	"
	Dewey, Francis H.*	"
	Davis, John C. B.	"
	Darling, H. G.	"
	Draper, Edwin*	"
	Day, Jonathan*	"
	Davis, Samuel*	"
	Daniels, F. H.*	"
	Dresser, George A.	"
	Dyer, Calvin*	"
	Dunbar, Rufus D.*	"
	DeWitt, Hon. Alexander*	Oxford.
	DeWitt, Horace S.*	"
	Dowley, Levi A.*	"
	Davis, George C.*	Northboro.
	Daniels, Nathan*	Leicester.
	Denny, Henry A.	"
	Denny, Joseph A.*	"
	Denny, Nathaniel P.	Norwich, Conn.
	Denny, George*	Westboro.
	Dodge, Harvey*	Wilkinsonville.
	Drake, Simeon A.	Sturbridge.
	Denny, Reuben S.*	Leicester.
	Davis, Henry G.	Millbury.
1854	Denny, Charles A.*	Leicester.
1854	Dwinnell, Leonard*	Millbury.
1854	Dana, John A.	Worcester.
1855	Daniels, George F.*	Oxford.
1858	Dudley, P. Whitin*	Whitinsville.
1859	Dodge, Pickering*	Worcester.
	Dixie, Edmund F.*	"
1864	Desper, William E.	"
1864	Dadmun, Appleton*	"
1865	Dewey, Mrs. Sarah B.	"
1865	Dewey, Carrie Clinton*	"
1865	Dewey, Rosebud*	"
1865	Davis, Edward L.	"
1865	Dodge, Thomas H.	"
1865	Dyer, Mrs. Calvin	"
1865	Dyer, Miss Hattie L.	"
1865	Dodge, Mrs. Benjamin J.	"
1866	Driscoll, Dennis*	"
1867	Draper, James	"
1867	Draper, Mrs. James	"
1867	Draper, Mrs. Edwin*	"
1869	Davis, Alfred	"
1869	Dudley, George J.	Sutton.
1869	Dutcher, Frank J.	Hopedale.
1870	Dawson, Thomas A.*	Worcester.
1870	Drury, Arthur H.	"
1871	Davis, Joseph E.	"

D.

Date.	Name.	Residence.
1873	Dawson, Mrs. Thomas A.	Worcester.
1875	Dana, Mrs. John A.	"
1881	DeLand, Mrs. E. H.*	"
1883	Darling, William	"
1890	Dewey, George T.	"
1891	Day, Charles B.	"
1894	Daniels, Mrs. M. M.	"
	Dalachie, Mathew B.	"
	Dodge, Benjamin J.	"
1896	Darling, Mrs. James F.	"

E.

Date.	Name.	Residence.
	Earle, Edward*	Worcester.
	Estabrook, James*	"
	Earle, John Milton*	"
	Earle, Mrs. Sarah H.*	"
	Earle, Mrs. Edward	"
	Earle, Timothy K.*	"
	Earle, Oliver K.*	"
	Earle, Thomas*	"
	Estey, James L.	"
	Earle, Anna B.	"
	Estabrook, Joseph*	Royalston.
	Edwards, John F.	Boston.
1855	Estabrook, James E.	Worcester.
1858	Eldred, Frederick A.*	"
1859	Estabrook, G. W.	Grafton.
1862	Eames, William*	Worcester.
1864	Eames, Miss Mary R.	"
1864	Ellsworth, Emory A.	Barre.
1865	Estabrook, George H.	Worcester.
1865	Estabrook, Daniel F.	"
1865	Earle, Miss Sarah F.	"
1866	Earle, Stephen C.	"
1866	Eastman, Miss Emma	"
1867	Estabrook, Mrs. Geo. H.*	"
1867	Emerson, Mrs. Jason*	Millbury.
1867	Eaton, Thomas B.	Worcester.
1867	Eaton, Mrs. Charlotte M.	"
1868	Ellsworth, Samuel*	"
1868	Eaton, Charles B.	"
1871	Earle, William H.	"
	Estabrook, Arthur E.	"

E.

Date.	Name.	Residence.
1873	Ellsworth, J. L.	"
1874	Earle, Mrs. Wm. H.*	"
1872	Eastman, William H.	"
1881	Eames, Luther R.	"
1892	Elwell, Edwin A.	"
1894	Evans, Mrs. Eliza W.	"

F.

Date.	Name.	Residence.
	Foster, Alfred D.*	Worcester.
	Fisher, Maturin L.*	"
	Fox, Lemuel J.*	"
	Flagg, David*	"
	Foster, Samuel B.*	"
	Fox, William B.*	"
	Flagg, Joel*	"
	French, Hiram*	"
	Flagg, Benjamin*	"
	Fuller, Elisha*	"
	Fox, William B. Jr.*	"
	Freeland, Charles W.*	"
	Flagg, Samuel, M. D.	"
	Flagg, Marshall*	"
	Field, John*	"
	Fitch, Ezra*	"
	Foster, Hon. Dwight*	"
	Fox, Miss N. Jane	"
	Flagg, Montraville*	Boylston.
	Flagg, Nahum	"
	Forbush, Calvin W.*	Grafton.
	Forbush, Curtis	California.
	Fitch, Dana H.*	Leicester.
	Flagg, Abijah*	Boylston
	Flagg, Stephen*	"
	Flagg, Benjamin*	Shrewsbury.
	Fairbanks, Orrin*	Westboro.
	Felton, Oliver C.	Brookfield.
	Fay, Peter*	Southboro.
	Forbush, Jonathan*	Bolton.
1854	Farnum, Joseph S.*	Worcester.
1855	Falconer, James D.	"
1856	Foster, Stephen S.*	"
1857	Ferguson, Samuel B.*	Westboro.
1858	Ferguson, George A.	"
1859	Ferguson, Henry C.	"
1863	Firth, Abram*	Boston.
1863	Foster, Adams*	Holden.
1863	Flint, Mrs. E. H.*	Leicester.

F.

Date.	Name.	Residence.
1863	Fayerweather, John A.	Westboro.
1863	Fiske, Edward R.*	Worcester.
1865	Fiske, Mrs. Edward R.*	Worcester.
1865	Farnum, Miss Ann Eliza	"
1865	Farnum, Miss Mary J.	"
1865	Fox, Miss Annie R. S.*	"
1866	Fuller, Mrs. James A.	"
1866	Francis, George E., M. D.	"
1866	Fisk, Miss Lydia C.	"
1866	Foster, Miss Alla W.	"
1866	Fox, Miss Maria	"
1867	Field, Samuel T.*	"
1867	Flagg, Mrs. Ebenezer	"
1869	Fisher, Simon E.	"
1870	Fisher, Mrs. Jennie M.	"
1871	Flagg, Mrs. Marshall	"
1872	Foster, Charles T.	Holden.
1874	Fitts, Mrs. D.	Oxford.
1874	Francis, Mrs. Elizabeth K.	Worcester.
1877	Fish, Henry C.	"
1881	Fish, Jonathan*	"
1881	Fiske, David L.	Grafton.
1886	Fairbanks, Alfred N.	Webster.
1892	Fuller, Homer T.	Worcester.
1896	Fobes, Mrs. William A.	"

G.

Date.	Name.	Residence.
	Green, John, M.D.*	Worcester.
	Gould, Hiram*	"
	Greenleaf, Frederick W.*	"
	Goodnow, E. D.*	"
	Goulding, Henry*	"
	Gates, Simon S.*	"
	Gould, Erasmus*	"
	Greenleaf, William*	"
	Gale, Frederick W.*	"
	Gilbert, Joseph A.*	"
	Gates, John*	"
	Goddard, Isaac*	"
	Goddard, S. B. I.*	"
	Green, James*	"
	Green, William N.*	"
	Green, Meltiah B.*	"
	Gilbert, Peregrine B.	"
	Green, Samuel F.*	"

G.

Date.	Name.	Residence.
	Gorham, Chester*	Barre.
	Gray, John, Jr.*	Worcester.
	Goodrich, Jesse W.*	"
	Gay, Wilkes	"
	Gregory, Joseph E.*	"
	Goss, William*	"
	Grout, Jonathan*	"
	Garside, James M.*	"
	Gill, George W.*	"
	Griggs, Joseph*	"
	Greenleaf, Sarah L.	"
	Green, Mrs. M. B.*	"
	Greenleaf, Mrs. Maria J.*	"
1854	Goddard, Benjamin*	"
1854	Goddard, John D.*	Shrewsbury.
1856	Greenleaf, Dolly A.	Worcester.
1856	Goddard, Silas	"
1859	Grout, J. Willie*	"
1860	Gleason, Charles W.	Holden.
1864	Green, Timothy Ruggles*	Worcester.
1864	Goodnow, Edward A.	"
1865	Goodell, Arthur A.*	"
1865	Goddard, Dorrance S.	"
1865	Gray, William L.*	"
1865	Gordon, Miss Elizabeth G.	"
1865	Gunderson, Christopher*	"
1865	Gilbert, Mrs. Chas. W.*	"
1865	Grout, Miss Lizzie	"
1865	Glazier, Henry*	"
1865	Garfield, Moses D.	Millbury.
1866	Gorham, Miss Mary E.	Worcester.
1866	Geer, George*	"
1866	Geer, Mrs. George	"
1866	Gates, Otis A.	"
1867	Gleason, Jonathan R.	"
1867	Goddard, Mrs. D. S.	"
1867	Green, Miss Julia E.	"
1867	Gleason, Joseph H.	Holden.
1867	Gordon, Albert A.	Worcester.
1867	Gordon, Mrs. Albert A.	"
	Gerould, Mrs. James H.	"
1871	Green, Samuel S.	"
1872	Gilbert, Charles W.	"
1874	Gibbs, Mrs. Mary E.	"
1874	Goodwin, Charles,	"
1879	Greenwood, Charles	"
1883	Gould, Abram K.	"
1883	Goddard, Mrs. Mary S.	"
1884	Gates, Harvelin T.	"
1893	Griffin, Thomas, Rt. Rev.	"
1894	Gates, Mrs. Frederick L.	"
1895	Green, J. Elton	Spencer.
	Green, Charles H.	"
	Gates, William H.	Worcester.

G.

Date.	Name.	Residence.
	Garst, Julius, M. D.	Worcester.

H.

Date.	Name.	Residence.
	Harris, Clarendon*	Worcester.
	Heard, Nathan*	"
	Hooper, William R.*	"
	Heywood, Daniel*	"
	Heywood, Benjamin F.*	"
	Haven, Samuel F.*	"
	Howland, S. A.*	"
	Harrington, Samuel*	"
	Howland, Henry J.*	"
	Hovey, William*	"
	Hill, Rev. Alonzo*	"
	Hamilton, Charles A.*	"
	Hadwen, Charles*	"
	Howe, Henry P.*	"
	Hammond, John*	"
	Harrington, F., Jr.	"
	Hawes, Russell L.*	"
	Hill, C. H.	"
	Harding, Samuel D.*	"
	Hall, Enoch	"
	Hadwen, O. B.	"
	Hemenway, Edward H.*	"
	Hale, Rev. Edward E.	"
	Harlow, A. R.*	"
	Hathaway, Samuel	"
	Hardon, Benjamin L.*	"
	Holmes, Pitt*	"
	Hill, J. Henry*	"
	Hartshorn, George F.	"
	Hall, Franklin	"
	Harris, O. F.	"
	Hoar, George F., Hon.	"
	Hartshorn, Jonas*	"
	Hartshorn, Calvin L.	"
	Hadwen, Mrs. Mary R.*	"
	Henderson, James G.*	"
	Harlow, Abner*	Shrewsbury.
	Heard, Samuel	Leicester.
	Henshaw, H. G.	"
	Hatch, Cheney*	"
	Holman, Parley*	"
	Haven, Luther*	Boston.
	Hill, Augustus G.*	Harvard.

H.

Date,	Name.	Residence.
	Hapgood, Lemuel B.*	Shrewsbury.
	Hunt, S. W.	"
	Holbrook, Cyrus	Sterling.
	Harrington, Stephen*	Millbury.
	Harrington, D. B.	"
	Hall, Charles	"
	Hale, Moses	Harvard.
	Hale, William*	Sutton.
	Heywood, Augustus	Grafton.
	Hastings, C. C. P.*	Mendon.
	Hill, Washington*	Spencer.
	Hartwell, Geo. W.*	Oxford.
	Holman, Amory*	Bolton.
	Hubbard, R. B.*	Sunderland.
	Hastings, Solon S.*	Princeton.
1854	Hacker, W. Alfred*	Worcester.
1854	Harrington, Adam L.*	"
1855	Harris, Mrs. Clarendon*	"
1856	Hartshorn, Mrs. Isabella F.	Worcester.
1858	Hunt, Francis W.	E. Douglas.
1860	Hartshorn, J. W.	Worcester.
1862	Heywood, Samuel R.	"
1862	Hall, Salmon D.*	Grafton.
1862	Harris, Gideon*	Worcester.
1862	Harrington, Chauncey G.	"
1863	Heywood, William H.*	"
1863	Hamilton, C. Willard	"
1863	Hammond, Parley*	"
1864	Huntington, Rev. Wm. R.	"
1864	Heywood, Miss Abby S.	"
1864	Hadwen, William E.	"
1864	Hadwen, Charles, Jr.	"
1864	Healey, Michael	"
1864	Howe, Mrs. E. M.	Sterling.
1864	Howe, William*	Millbury.
1864	Hubbard, Cyrus K.	Worcester.
1864	Heywood, Miss Emma H.	"
1864	Hadwen, Miss Amie B.	"
1865	Hascall, Jefferson*	Shrewsb'y.
1865	Hill, Mrs. J. Henry	Worcester.
1865	Heald, Jonas*	Worcester.
1865	Howe, Church	Holden.
1865	Hunt, Addison A.*	Shrewsb'y.
1865	Hemenway, D. M.*	Millbury.
1865	Houghton, Alba, Jr.	Worcester.
1865	Harrington, Halloway*	"
1865	Hamilton, Mrs. C. Willard	"
1865	Haven, Edwin*	"
1866	Hoyle, Miss Mary A.	Millbury.
1866	Holbrook, Wm. D.*	Worcester.
1866	Holman, Mrs. Henrietta A.	"
1866	Holbrook, Mrs. Wm. D.	"
1866	Holman, Mrs. William Y.*	"
1867	Hancock, Frederick	"
1867	Hartwell, Isaac B.*	Oxford.
1867	Haskins, D. W.*	Worcester.

H.

Date.	Name.	Residence.
1867	Hatch, O. L.*	Worcester.
1867	Hatch, Mrs. O. L.	"
1867	Hutchinson, Gerry*	"
1867	Hutchinson, Mrs. Gerry	"
1867	Hapgood, L. R.	"
1867	Hillard, Mrs. John	"
1867	Harrington, Mrs. Stephen	"
1867	Harris, Mrs. Gideon	"
1867	Harrington, Frank W.	"
1868	Holman, William Y.*	"
1869	Hancock, Miss Etta	"
	Hammond, Mrs. Henry K.*	"
1870	Hicks, Samuel P.*	"
1870	Hapgood, Joab*	Shrewsbury.
1870	Harlow, Wm. T.	Worcester.
1870	Harris, John A.	Rutland.
1871	Hamilton, Edw'd B.	Worcester.
1871	Hammond, Henry K.*	"
1871	Hamilton, Miss Fanny M.*	"
1871	Harris, Warren	Millbury.
1872	Hastings, J. E.*	Worcester.
1874	Hartshorn, Mrs. C. L.	"
1874	Hovey, C. H.*	Cambridgeport.
1874	Hadwen, Mrs. O. B.	Worcester.
1875	Hackett, William H.*	"
1880	Hixon, Adin A.	"
1880	Hixon, Mrs. A. A.	"
1880	Hall, Mrs. C. S.	"
1881	Houghton, C. C.	"
1882	Henderson, Mrs. A. E.	"
1884	Hoyt, Mrs. Henry A.*	"
1886	Howland, J. A.*	Worcester.
	Hall, Edward	"
	Head, Patrick*	"
	Howes, Isaac*	"
1887	Hough, John	"
	Hixon, Mrs. Francois W.	"
1891	Henry, John Edw'd	Westboro.
	Hall, Mrs. Edward	Worcester.
1893	Hammond, Frederick H.	"
1894	Hartshorn, Arthur E.	"
	Henderson, Anna May	"
	Henderson, Ida Josephine	"
	Henderson, Eleanor G.	"
	Hixon, Allyne W.	"
	Hartshorn, Annie M.	"
	Hodsdon, William M.	"
1895	Hodge, Clifton F., M. D.	"
	Houghton, Mrs. Abbie F.	"
1897	Holland, Frank H.	"

I.

Date.	Name.	Residence.
1896	Inches, George B.	N. Grafton.
	Inches, Mrs. G. B.	"

J.

Date.	Name.	Residence.
	Jaques, George*	Worcester.
	Johnson, Asa T.	"
	Johnson, Henry F., M. D.	"
	Johnson, Eli	"
	Jackson, William*	"
1854	James, Rev. Horace*	"
1854	Johnson, William*	"
1855	Johnson, Charles*	Northboro.
1855	Johnson, Joshua J.*	"
1855	Johnson, Oliver*	Sterling.
1856	Jaques, John C.*	Worcester.
1856	Jewett, Darwin E.	Westboro.
1865	Jones, Willard*	Worcester.
1867	Johnson, John F.	Northboro.
1867	Jones, Rev. J. D. E.*	Worcester.
1867	Johnson, Ida W.	"
1867	Johnson, Wm. H.	Northboro
1870	Jillson, Clark*	Worcester.
1870	Jenkins, Curtis	"
1874	Jewett, Ebenezer	"
1875	Jaques, Benjamin C.	"
1880	Jones, Herbert A.	"
1886	James, Benjamin	"
	Johnson, William H.	"
1891	Jackson, Joseph	"
	Jones, Mrs. Plinietta M.	"
1896	Jewett, Warren C.	"

K.

Date.	Name.	Residence.
	Kettell, John P.*	Worcester.
	Kinnicutt, Thomas*	"
	Knox, Samuel A.*	"
	Knapp, Joel*	Sutton.

K.

Date.	Name.	Residence.
	Kilburn, Eli*	Sterling.
	Kinnicutt, Francis H.*	Worcester.
	Kendall, Hon. Joseph G.*	"
	Knights, Jonathan H.*	"
	Keith, Timothy*	"
1854	Kinnicutt, Eliza M.	"
1854	Kinnicutt, Rebecca N.	"
1857	Kent, S. W.*	"
1858	Keyes, W. W.	West Boylston.
1865	Kimball, Mrs. Sarah A.	Worcester.
1865	Kelley, Dr. Francis H.*	"
1866	Keyes, Charles A.	"
1866	Keith, Henry R.*	"
1867	Kraft, Michael*	Leicester.
1867	Kinney, Mrs. W. P.	Worcester.
1867	Kinney, Frank J.	"
1868	Knowles, Lucius J.*	"
1868	Knox, S. Harrison	"
1869	Kinney, Wm. P.	"
1870	Kendall, Edward	"
1870	Kinnicutt, Leonard P.	"
1873	Kinnicutt, Mrs. Francis H.*	Worcester.
1875	Kendall, Mrs. George H.	"
1880	Kinney, Mrs. Ann M. F.*	"
1891	Kinney, Herbert R.	"
	Kinney, Mrs. Fannie E. Dodd	Worcester.
1892	Kendall, Louis J.	"
	King, Simeon E.	West Millbury.
1893	King, Mrs. Homer R.	Worcester.
	Kimmens, Gilbert A.	"
1896	King, Mrs. Simeon E.	West Millbury.

L.

Date.	Name.	Residence.
	Lincoln, William*	Worcester.
	Lincoln, John W.*	"
	Lincoln, Gov. Levi*	"
	Lakin, Ansel*	"
	Lovell, Joseph*	"
	Leonard, Samuel S.*	"
	Lincoln, D. Waldo*	"
	Lincoln, Edward W.*	"
	Lazell, Warren*	"
	Lincoln, William S.*	"

L.

Date.	Name.	Residence.
	Lamson, William C.*	Worcester.
	Lonergan, Patrick	"
	Lincoln, Mrs. D. Waldo*	"
	Lincoln, Miss G. De V.*	"
	Lincoln, Miss Mary W.	"
	Lovell, A. Beaman*	"
	Lincoln, Miss Frances M.	"
	Lamb, Josiah Q.*	Leicester.
	Loring, John*	"
	Lamson, H. O.*	W. Brookfield.
	Leach, James*	Westboro.
	Leland, Joshua W.*	Grafton.
	Longley, James	Boston.
	Lovell, Mrs. Mary E.	Worcester.
1854	Lee, David*	Barre
1854	Lee, Henry A.*	Worcester.
1854	Lincoln, William*	"
1855	Lamb, Edward*	"
1855	Lovell, Joseph C.*	West Boylston.
1855	Lee, George H.	Barre.
1856	Lovering, Samuel F.*	Worcester.
1856	Lincoln, Levi, 2d.	"
1859	Leland, Horace*	Sutton.
1860	Lincoln, Waldo	Worcester.
1861	Lovell, Albert A.	"
1863	Lovell, Addison*	W. Boylston.
1864	Lincoln, John Waldo	Worcester.
1864	Lincoln, Annie Marston	"
1864	Lincoln, Marian Vinal	"
1864	Lee, Mrs. Dorcas B.	"
1865	Lincoln, Mrs. Kate Von Weber	Worcester.
1865	Lincoln, Marston	"
1865	Lewis, Benjamin*	"
1865	Lamb, Thomas M.*	"
1865	Lewisson, Louis	"
1866	Lovell, John D.	"
1867	Lynam, Mrs. John	"
1867	Lamb, Mrs. T. M.	"
1868	Lincoln, Adeline Sever	"
1868	Lovell, Cyrus A.	"
1870	Lamb, Alice B.	"
1870	Lovell, Miss Abby M.	West Boylston.
1870	Lincoln, Helen	Worcester.
1871	Loomis, H. F.*	"
1871	Lange, Hermann F. A.	"
1872	Lincoln, Pelham Winslow	"
1874	Lovell, Mrs. C. Augusta*	"
1874	Lincoln, Mrs. William S.	"
1874	Lincoln, Mrs. Levi	"
1874	Lovell, Mrs. Jane M.*	West Boylston.
1875	Lincoln, Winslow S.	Worcester.

L.

Date.	Name.	Residence.
1875	Lincoln, Miss Kate Von W.*	Worcester.
1881	Lovell, Mrs. S. L. C.	"
1884	Lovell, Henry	"
1886	Lovell, George A.*	"
1887	Lange, Albert H.	"
1893	Littlefield, Henry F.	"
1896	Lincoln, William E.	Warren.

M.

Date.	Name.	Residence.
	Merrifield, Alpheus*	Worcester.
	Merrick, Francis T.*	"
	Miller, Henry W.*	"
	Messenger, David S.*	"
	Merrifield, F. N.*	"
	Merrifield, Ann B.*	"
	Merrifield, William T.*	"
	Merrifield, Catharine A.*	"
	Mason, L. L.*	"
	Maynard, William G.*	"
	Morse, James C.*	"
	Merrifield, A. M.*	"
	Mason, Joseph	"
	Miles, Charles M.*	"
	Miller, S. P., M. D.*	"
	Marsh, Alexander*	"
	Mason, John C.*	"
	Merrick, Sarah R.*	"
	Merrifield, Mrs. Wm. T.*	"
	Messenger, Elizabeth F.	"
	Miller, Ruth Ann	"
	Miller, Alice M.	"
	Merrifield, William F.	"
	Merriam, Thomas*	"
	Moore, David T.*	Boylston.
	Morse, Adolphus*	Roch'r, N. Y.
	May, Samuel, Jr.*	Leicester.
	Murdock, Joshua, Jr.*	"
	McFarland, H.	Framingham.
	Moore, J. H.	Charlton.
	Merriam, Isaac S.*	Auburn.
	McLellan, James	Sutton.
	Moen, Philip L.*	Worcester.
1854	Merrifield, Henry K.	"
1854	Metcalf, Caleb B.*	"
1855	Moore, Ashley*	"
1857	Mills, Isaac*	"
1857	Merriam, N. K.	Grafton.
1859	Merrifield, Maria J.*	Worces'r.
1859	Merrifield, Harriet	"

M.

Date.	Name.	Residence.
1859	Marble, F. M.*	Grafton.
1862	Morse, Edwin*	Worcester.
1863	Mascroft, W. D.*	Northbridge.
1863	Messenger, Miss Mary A.	Worcester.
1864	Mower, Miss Caroline C.*	"
1865	Marsh, Henry A.	"
1865	Merrifield, Mrs. Lucy A.*	"
1865	Morgan, Charles H.	"
1865	Messenger, Miss Susie S.	"
1865	Madaus, Charles	"
1865	Messenger, Frank L.	"
1866	Marble, Henry	Millbury.
1866	Morey, Oliver S.	Shrewsbury.
1866	McPherson, Mrs. Eliz. W.	Worcester.
1867	Morse, Mrs. C. D.	Millbury.
1867	Martin, Miss M. W.	Worcester.
1867	Morse, Mrs. Mason H.	"
1867	Murphy, John*	"
1870	McFarland, Edwin D.	"
1871	Morrison, Stephen,	"
1871	Morey, Mrs. L.*	Shrewsbury.
1872	Midgeley, John	Worcester.
1872	McIntire, Benj. F.	Millbury.
1872	Macullar, Addison*	Worcester.
1866	Moen, Mrs. Maria S. G.	"
1873	Morse, C., Jr.	"
1874	Mascroft, Henry C.*	"
1880	Morse, Miss Fanny C.	"
1881	March, David T.*	Millbury.
1882	Moore, Miss Sarah A.	Worce'r.
1882	Marble, Edward F.	"
1884	Merrifield, Mrs. F. H.	"
1886	McWilliams, Geo.	Whitinsville.
1886	McCracken, Geo. J.	Worcester.
	Moore, Elliott	"
1887	Mann, Charles F.	"
	Marble, Arthur J.	"
	Maynard, Wm. U.	Shrewsbury.
1894	Moore, Henry Ward,	Worces'r.
1895	McInnes, John C.	"
1896	Madaus, Frederick B.	"
	Midgley, Leonard C.	"
	Marble, A. Leslie	"

N.

Date.	Name.	Residence.
	Newcomb, Henry K.*	Worce'r.
	Nelson, Jonathan*	"
	Newton, Rejoice*	"
	Nash, Charles	"
	Newton, John C.*	"
	Nelson, Rev. John*	Leicester.
	Newton, Wm., M. D.*	Worce'r.
1854	Nourse, Benj. B.	Westboro.
1863	Nelson, Thomas L.	Worcester.
1863	Norcross, Thos. R.*	Shrews'y.
1864	Nichols, E. W.*	Worcester.
1865	Newton, Mrs. Jas. H.	Holyoke.
1866	Nichols, Mrs. C. P.	Worcester.
1867	Newton, Mrs. John C.*	"
1867	Newell, Mrs. Ann M.	Boylston.
1867	Newton, Miss S. E.	Millbury.
1872	Nelson, Mrs. T. L.	Worcester.
1880	Nelson, Miss Louisa B.	"
1883	Neilson, John	"
1894	Norcross, James A.	"
	Norcross, Mrs. James A.	"
1896	Newton, Benjamin S.	

O.

Date.	Name.	Residence.
	Oliver, Edward H.*	Worcester.
	Olney, Mrs. Richard	"
1863	Osgood, James H.*	"
1870	Olin, Matthias*	Springfield.
1866	Onthank, J. M.*	
1879	Overend, Walter E.	Worcester.
1886	Overend, Mrs. Samuel	"
	Osborne, John*	"
	O'Connell, William	"
1894	Orpet, Edward	So. Lancaster.

P.

Date.	Name.	Residence.
	Paine, Frederick W.*	Worce'r.
	Paine, Henry*	"
	Paine, Charles*	"
	Paine, Gardiner*	"
	Pratt, Joseph*	"

P.

Date.	Name.	Residence.
	Phillips, Moses D.*	Worcester.
	Pond, John F.*	"
	Pickford, J. K. L.*	"
	Phelps, Horatio*	"
	Paine, J. W.	"
	Perry, Samuel*	"
	Park, John*	"
	Pratt, Jotham B.*	"
	Perkins, Joseph*	"
	Phelps, J. Emory*	"
	Prentiss, Charles G.*	"
	Putnam, F. H.*	"
	Pratt, Sylvanus*	"
	Prentice, Henry*	"
	Paine, William R.*	"
	Piper, William*	"
	Putnam, Charles L.*	"
	Paine, Ann E.	"
	Paine, Mrs. Charles*	"
	Paine, Anna C. S.*	"
	Pratt, Sumner*	"
	Pratt, W. W.*	"
	Parker, Grenville*	"
	Putnam, S. P.	"
	Partridge, Joseph L.	Boston.
	Patrick, John*	Warren.
	Parmenter, Silas	Westboro.
	Perrin, Payson H.*	"
	Phelps, Henry R.	"
	Pierce, Charles A.	Grafton.
	Potter, Hervey K.*	"
	Porter, Joshua, Jr., M. D.*	North Brookfield.
	Pierce, Thomas*	Spencer.
	Pope, Jonathan A.	Millbury.
	Perry, Dexter H.*	Worcester.
	Peck, Frederick M.	"
	Parkhurst, Nathaniel R.*	"
1854	Paine, Nathaniel	"
1854	Partridge, Elbridge G.*	"
1854	Phelps, Henry	"
1854	Proctor, Edward	Spencer.
1855	Paine, Miss Alice W.	Worcester.
1855	Paine, Miss Elizabeth F.	"
1856	Peaslee, Abram*	"
1856	Patch, Whipple W.*	"
1856	Pratt, Daniel R.*	"
1857	Phillips, Luther*	"
1862	Phillips, Ivers	"
1863	Pond, Lucius W.*	"
1863	Pratt, Charles B.	"
1863	Phelps, George E.	"
1863	Pinkham, James S.*	"
1864	Phillips, Miss Marianne	"
1864	Pike, James T.*	"
1864	Pierce, Mrs. Charles L.*	"
1865	Paine, Mrs. D. H.	"

P.

Date.	Name.	Residence.
1865	Pratt, Mrs. Sumner	Worcester.
1865	Pratt, Miss Emma A.	"
1865	Pratt, Frederick S.	"
1865	Pratt, Edward R.*	"
1865	Pierce, James R.*	"
1865	Phelps, Mrs. Sallie	"
1865	Phelps, Miss Sarah D.	"
1865	Phelps, Miss Mary R.	"
1865	Phelps, Miss Deborah	"
1865	Phelps, Miss Helen E.*	"
1865	Peckham, George R.*	"
1866	Parsons, Mrs. Solomon*	"
1867	Parsons, Mrs. Samuel B.*	"
1867	Parker, Mrs. Aaron	"
1867	Piper, George M.*	"
1867	Parker, Henry L.	"
1867	Pierce, Charles L.*	"
1867	Pickett, Mrs. Josiah	"
1867	Phelps, John E.	"
1867	Peckham, Mrs. George R.	"
1868	Porter, Samuel A.*	"
1869	Putnam, Archelaus	Holden.
1870	Perry, S. Payson	Auburn.
1871	Palmer, Addison	Worcester.
1873	Putnam, Samuel	"
1874	Parker, Henry L., Jr.*	"
1874	Phelps, Mrs. Joseph E.*	"
1874	Pierce, George M.	"
1875	Pierce, John M.	W. Boylston.
1875	Pollard, Edward C.	Worcester.
1875	Pratt, Samuel A.	"
1875	Parker, Mrs. C. E.	Holden.
1876	Phelps, William E.	Worcester.
1878	Phelps, Mrs. Henry	"
1878	Peters, John L.*	"
1879	Parker, Charles E.	Holden.
1880	Pierce, James E.	W. Boylston.
1882	Perry, Miss Mary S.	Worcester.
1884	Putnam, Samuel H.	"
1884	Powers, Joseph W.*	"
1884	Pond, Willard F.	"
1886	Porter, Miss Juliet	"
	Putnam, Henry	"
	Pierce, Arba	"
1888	Potter, Burton W.	"
1892	Pond, Mrs. Willard F.	"
1893	Powers, Miss S. H.	"
1894	Peters, Lewis A.	"
	Perry, Joseph S.	"
	Potter, Mrs. Burton W.	"
1896	Parker, Mrs. Sarah A.	"
	Parker, Alice Louise	"
	Parker, Frank E.	"
	Parsons, Norman B.	"
	Parsons, Annie Gibbs	"

Q.

Date.	Name.	Residence.
1878	Quimby, H. M., M. D.	Worcester.
1890	Quinn, J. Frank	"

R.

Date.	Name.	Residence.
	Rice, George T.*	Worcester.
	Richardson, George W.*	"
	Richardson, Mrs. G. W.*	"
	Rice, Darius*	"
	Russell, George W.*	"
	Rice, Josiah*	"
	Rice, Thomas H.	"
	Reed, Benjamin*	"
	Rice, Sewall*	"
	Ramsay, O. A.	"
	Ripley, John C.*	"
	Rice, E. B.*	"
	Robbins, Charles B.*	"
	Rice, George M.	"
	Rockwood, Adams	"
	Rice, Mrs. Geo. T.	Worcester.
	Richardson, Anna M.	"
	Rice, Francis B.	"
	Randall, Abraham G.*	Millbury.
	Rice, Abbott B.*	Northboro.
	Rice, Danforth	Leicester.
	Rogers, Edward*	Webster.
1856	Ripley, Mrs. Sarah P. T.*	Worcester.
1856	Ruggles, Draper*	"
1856	Rice, George T.*	"
1856	Rice, Mrs. George T.*	"
1862	Ring, John	"
1863	Richardson, Charles*	"
1863	Richardson, Miss Fannie A.	"
1865	Read, Miss Sarah E.	"
1865	Rogers, Israel M.*	"
1865	Richardson, Mrs. Charles	"
1866	Reed, L. R. S.*	"
1866	Robinson, James*	"
1866	Rice, Mrs. S. Elizabeth	"
1866	Robinson, Mrs. James	"
1867	Rice, Ezra B.	"
1867	Rice, Mrs. J. Marcus*	"
1870	Rogers, James S.	"
1871	Richardson, Clifford	"
1872	Rice, Peter*	"
1874	Rice, Miss Louisa A.	"

R.

Date.	Name.	Residence.
1875	Rogers, George W.*	Worcester.
1876	Reed, Henry, Jr.	"
1879	Rice, George Calvin	"
1880	Rogers, Mrs. Nellie F.	"
1880	Rice, Abner	"
1881	Record, S. H.	"
1881	Record, Mrs. S. H.	"
1881	Rich, Mrs. Annie P.	"
1881	Rich, George H.	"
1883	Reynolds, Henry T.	"
1884	Rice, Alden	"
1887	Rockwood, Calvin R.	"
1890	Reed, Charles G.	"
1890	Rugg, Arthur P.	"
1893	Reed, Karl B.	"
1894	Robinson, Alfred M.	"
1895	Robinson, Chas. Henry	"
	Rich, Henry E.	"
1896	Ross, Walter D.	"
	Rathbun, Edward,	"

S.

Date.	Name.	Residence.
	Salisbury, Hon. Stephen*	Worcester.
	Shepherd, James*	"
	Smith, Chandler*	"
	Stowell, David D.*	"
	Sweetser, Rev. Seth*	"
	Stone, Daniel*	"
	Stowe, Elijah*	"
	Shepherd, James, Jr.	"
	Stone, Aaron, Jr.	"
	Stowell, L. W.*	"
	Scott, Samuel B.*	"
	Sargent, Joseph, M. D.*	"
	Southwick, Edward*	"
	Story, Simeon N.	"
	Spooner, Moses*	"
	Stoddard, Elijah B.	"
	Scott, David, Jr.*	"
	Stebbins, Edward S.	"
	Smith, Lewis*	"
	Sargent, Henry, M. D.*	"
	Salisbury, Mrs. S.*	"
	Smalley, Rev. Elam*	"
	Stone, Samuel V.*	"
	Smith, Lemuel*	"
	Smith, Samuel*	"
	Selby, Samuel H.*	"

S.

Date.	Name.	Residence.
	Southgate, Isaac*	Leicester.
	Sargent, Joseph D.*	"
	Sargent, John*	"
	Stone, Abijah*	"
	Sargent, Homer E.	"
	Slater, George B.*	Webster.
	Sibley, Jonas L.*	Sutton.
	Slocomb, Horatio*	Saundersville.
	Snow, Henry*	Shrewsbury.
	Stone, Job C.*	"
	Slocomb, J. W.*	Grafton.
	Smith, Asa F.	"
	Sanford, Rev. William*	Boylston.
	Stone, Joseph	Westboro.
	Southworth, Chas.	Northboro.
	Sibley, D. B.	Millbury.
	Sumner, Sullivan	Milford.
	Smith, R. R.	Lynn.
	Symmes, C. T.	Lancaster.
1854	Sears, Sylvanus	Worcester.
1854	Smith, Larkin*	"
1854	Stowe, Martin*	"
1855	Snow, Winsor N., M. D.*	"
1855	Strong, Francis*	"
1856	Smith, L. F.	Northbridge.
1856	Sprague, A. B. R.	Worcester.
1856	Stiles, Francis, Jr.	"
1860	Stone, Josiah G.*	Shrewsbury.
1862	Swett, William O.	Worcester.
1862	Stone, Timothy S.*	"
1862	Sawyer, Ezra	"
1863	Stearns, Edwin*	Millbury
1863	Struthers, William C.*	"
1863	Slocum, George F.*	Grafton.
1863	Swan, Elliott*	Worcester.
1864	Searles, Miss Lydia A.	Wilkinsonville.
1864	Sawyer, Stephen	Worcester.
1865	Salisbury, Stephen, Jr.	"
1865	Scofield, James M.*	"
1865	Smith, Charles W.*	"
1865	Scott, Mrs. David	"
1865	Sumner, Mrs. George	"
1865	Sumner, George*	"
1865	Smith, Miss Harriett A.	"
1865	Smythe, W. A. S.*	"
1865	Smith, J. Sargent	Leicester.
1866	Scott, Miss Alice	Worcester.
1866	Sears, Alden H.	"
1866	Smith, James A.*	"
1866	Smith, Sidney	"
1866	Shaw, Mrs. John B.*	"
1867	Sturtevant, Mrs. Harvey	"
1867	Smith, Mrs. Sarah M.	"
1867	Streeter, John P.	"
1867	Stone, Mrs. Lottie J.	"

S.

Date.	Name.	Residence.
1867	Stone, Miss L. Jennie*	Worcester.
1867	Stone, Miss Mary A.	"
1867	Stone, Miss Lizzie	"
1867	Stone, George H.	"
1867	Sanders, Eri*	"
1868	Skinner, Miss Kate J.	"
1868	Smith, Woodbury C.	"
1871	Stowe, Luther*	"
1871	Spinney, George	"
1871	Southwick, Thomas	Leicester.
1872	Schaff, Mrs. Sarah D.	"
1872	Stiles, Frederick G.	Worcester.
1872	Smith, Chas. Henry	Millbury.
1874	Southwick, Mrs. T.	Leicester.
1874	Stiles, Mrs. F. G.	Worcester.
1874	Staples, Samuel E.	"
1874	Searles, David H.	Sutton.
1875	Smith, S. H.	W. Boylston.
1877	Stone, Charles W.	Worcester.
1879	Smith, Miss J. F.	"
1879	Smith, Miss Mary A.	"
1880	Smith, Charles D.	"
1881	Smith, Thomas	"
1882	Sargent, Mrs. Wallace E.	"
1886	Sprague, Horace E.	"
1890	Stratton, Frederick A.	"
1892	Sears, Philander	"
1892	Stockwell, Hon. J. W.	Sutton.
1893	Stevens, Henry E.	Worcester.
1894	Sibley, Lewis W.	"
	Stanley, Annie Maude	"
1895	Smith, Harlan A.	"
1896	Stone, George E.	Shrewsbury.
	Stone, George E.	Amherst.

T.

Date.	Name.	Residence.
	Thomas, Hon. Benjamin F.*	West Roxbury.
	Tolman, Albert*	Worcester.
	Tead, Nathaniel*	"
	Taft, Putman W.*	"
	Tower, Horatio N.*	"
	Taft, George C.*	"
	Trumbull, George A.*	"
	Tainter, Daniel*	"
	Thurber, Charles*	"
	Tourtellott, S.*	"

T.

Date.	Name.	Residence.
	Tucker, Thomas*	Worcester.
	Taft, Stephen*	"
	Thomas, Mrs. B. F.*	"
	Tenney, Daniel*	Sutton.
	Taylor, Samuel*	"
	Thayer, Joseph*	Uxbridge.
	Taft, Bezaleel*	"
	Torrey, Samuel D.*	Millbury.
	Taylor, Thomas	Dudley.
	Taft, Lewis S.	Uxbridge.
	Tucker, Augustus*	Worcester.
1854	Thurston, Joseph*	"
1854	Tiffany, P. Dexter*	"
1855	Thurston, David C.*	"
1855	Thurber, Mrs. M. F.	"
1856	Tiffany, Mrs. H. K.	"
1856	Trumbull, Miss Susan	"
1856	Tiffany, John K.	"
1856	Thomas, Benj. F., Jr.*	"
1858	Thompson, William C.*	"
1859	Tourtellott, S. D.*	"
1860	Thurston, William H.	Oxford.
1862	Trumbull, John*	Worcester.
1863	Taft, Calvin*	"
	Tainter, Harvey S.*	"
1864	Tainter, Mrs. Daniel*	"
1864	Thayer, Alexander*	"
1864	Taft, Mrs. Calvin	"
1865	Thompson, Simeon E.*	"
1865	Taft, Lyman J.*	"
1865	Taft, Mrs. Lyman J.	"
1865	Taft, Henry G.	"
1865	Turner, Mrs. Peter J.	"
1865	Taft, Edward C.	"
1865	Thayer, Benjamin*	"
1865	Tower, Miss Addie L.	"
	Thayer, Perry*	"
1866	Thayer, Horace*	"
1866	Thayer, Mrs. Horace	"
1866	Tainter, Mrs. E. C.	"
1867	Tainter, Ephraim C.	"
1867	Trask, Mrs. F. J.	Leicester.
1867	Tarbox, John L.*	Worcester.
1870	Taylor, R. C.	"
1870	Townsend, Velette P.	"
1870	Thayer, Charles D.	"
1871	Thompson, C. O.*	"
1872	Tainter, Charles E.*	"
1874	Thompson, Miss Ella G.	"
1876	Thurston, L. D.	Leicester.
1878	Tolman, Miss Mary	Worcester.
1883	Talbot, Thomas	"
1884	Tourtellott, Daniel C.*	"
1889	Thayer, Alden	"
1894	Tourtelotte, Mrs. Eliz. R.	"

U.

Date.	Name.	Residence.
	Upham, George*	Worcester.
	Upham, Baylies*	"
	Underwood, Orison*	Milford.
	Underwood, Austin	Westboro.
1866	Upham, Harvey G.*	Worcester.
1870	Upham, Roger F.	"
1881	Upham, Mrs. Harvey G.	"

V.

Date.	Name.	Residence.
	Vaill, Edward W.	Worcester.

W.

Date.	Name.	Residence.
	Waldo, Hon. Daniel*	Worces'r.
	Washburn, Ichabod*	"
	Workman, Wm., M. D.*	"
	Woodward, Rufus, M. D.*	"
	Wheeler, William A.*	"
	Washburn, Hon. Emory*	"
	White, James*	"
	Willard, Fitzroy*	"
	Whiting, Charles H.*	"
	Williams, William A.	"
	Whittemore, Charles	"
	White, Charles*	"
	Walker, Asa*	"
	Walker, Benjamin*	"
	Walker, Joseph, Jr.*	"
	Williams, Warren*	"
	Ward, Artemas*	"
	Wheeler, Miss F. N.*	"
	Wheeler, George W.*	"
	Wheeler, William F.	"
	Ward, Daniel*	"
	Whiting, Charles B.	"
	Whittemore, Miss E. J.	"
	Whitcomb, John P.*	Harvard.
	Woodward, Samuel B., M. D.*	Worcester.
	Waters, Asa H.*	Millbury.
	White, George W.	Cambridge.
	White, Alonzo*	Leicester.

W.

Date.	Name.	Residence.
	Watson, Horace C.	Leicester.
	Woodcock, Josephus*	"
	Woodcock, Lucius*	"
	Whitin, Hon. Paul*	Whitinsville.
	Whitin, John C.*	"
	White, Charles	Northbridge.
	Wing, Hiram*	"
	Work, John W.*	Templeton.
	Weed, Jared*	Petersham.
	Whiting, B. D.	Boston.
	Whiting, B. G.	Lunenburg.
	Wheeler, Jonathan D.*	Grafton.
	Wood, Samuel*	"
	Wheelock, William A.	Dudley.
	Wheaton, Henry S.*	California.
1854	Wheeler, Charles A.*	Worces'r.
1854	Woodward, J. L.*	Millbury.
1854	Willard, Mrs. Fitzroy*	Worcester.
1855	Whiting, Benjamin F.	"
1855	Williams, James Otis*	"
1855	Washburn, Henry S.	"
1855	Ward, Samuel D.	Shrewsbury.
1855	Whittier, C. V.	Northbridge.
1856	Whitin, N. D.*	"
1856	Wood, J. G.*	Millbury.
1856	Whiting, Geo. W.	Worcester.
1857	Williams, Hartley*	"
1858	Woodward, Henry	"
1858	Woodward, Samuel*	"
1859	Ward, Thomas W.	Shrewsb'y.
1862	Willard, Calvin*	Worcester.
1862	Wyman, Mrs. Abby	"
1862	Wyman, Miss Nellie M.	"
1862	Wood, Newell*	Millbury.
1863	Wheeler, William H.	Grafton.
1863	Warren, John M.*	Worcester.
1863	Washburn, Nathan	"
1863	White, William	"
1863	Whitcomb, Carter*	"
1863	Warren, Rufus C.*	Grafton.
1863	Whittier, Mrs. Nellie S.*	Worcester.
1863	Wing, Henry F.*	Grafton.
1864	Works, Edwin D.	Fitchburg.
1864	Wheeler, Mrs. Nelson	Worce'r.
1864	Wheeler, Henry A.*	"
1864	White, Dea. Cyrus*	Millbury.
1864	Workman, Miss Louisa J.	Worcester.
1864	Whipple, Franklin*	"
1865	Woodcock, Theo. E.	Leicester.
1865	Wheeler, Mrs. G. W.*	Worce'r.
1865	Wheeler, Miss Mary G. B.*	"
1865	Williams, Miss Henrietta F.	Worcester.
1865	Williams, Miss Mary E.	"

W.

Date.	Name.	Residence.
1865	Workman, Mrs. Wm.*	Worcester.
1866	Wheeler, Miss Nancy*	"
1866	Wellington, Timothy W.*	"
1866	Wellington, Mrs. T. W.	"
1866	Wellington, Fred'k W.*	"
1866	Whiting, Miss Mary F.*	"
1866	Whittier, Melvin O.	"
1866	Winn, Mrs. Francis*	"
1866	Warren, John D.*	"
1867	Williams, Mrs. Hartley	"
1867	Whittemore, Mrs. Asa D.	"
1867	Willard, Miss Mary E.	"
1867	Wheeler, Erastus S.*	Berlin.
1867	Wilson, George W.	Worcester.
1868	Ward, Mrs. Daniel	"
1868	Willard, Mrs. Calvin*	"
1868	Waite, Andrew J.	"
1869	Woodwell, Charles H.*	"
1870	Whittemore, Mrs. Charles	"
	Weston, Miss J. A.	"
1871	Washburn, John D.	"
1871	Witherby, L. B.*	"
	Waters, Charles H.*	Groton.
1871	Willis, Clara	Worcester.
1872	White, Miss Lizzie	"
1872	Walker, Joseph H.	"
1872	Watson, L. S.	Leicester.
1872	Woodward, Mrs. Mary E.	Worcester.
1873	Whitcomb, G. Henry	"
1873	Whitcomb, Mrs. Abbie E.	"
1873	Ward, Frederick W.	"
1874	Whittier, Miss Mabelle E.	"
1874	Ward, Miss Ella H.	Shrewsb'y.
1874	Williams, Mrs. Warren	Worcester.
1875	Workman, Dr. Wm., Jr.	"
1879	Willard, Dr. Franklin B.	Boylston.
1880	Ward, Mrs. Thomas	Worcester.
1880	Watts, H. B.	Leicester.
1880	Wakefield, C. H.	Worcester.
1882	Woodis, Mrs. Julia	"
1882	Ward, Mrs. Austin W.	"
1882	Watts, Mrs. H. B.	Leicester.
1882	Wilson, Mrs. Abiel E.*	Worcester.
1884	Wyman, O. B.	Shrewsbury.
1885	Wesson, Frederic H.	Worces'r.
1886	Wood, William J.	"
1887	Wheeler, William J.	"
1888	Winslow, Samuel E.	"
1891	Watts, Walter G.	Leicester.
1893	Wetherbee, Gustavus E.	Worcester.
	Wetherbee, Mrs. Gustavus E.	Worcester.

W.

Date.	Name.	Residence.
1894	Wight, Stanley G.	Brookfield.
	White, Franklin B.	"
	Watts, Edward J.	Leicester.
	Watts, Annie Viola	"
	Watts, Florence Emma	"
	Watts, Sarah May	"
	Wood, Charles M.	Upton.
1895	Weeks, Eslie A.	Worcester.
1895	White, A. Avery	"
1896	Wilson, Dwight E.	"
	Wesby, Mrs. Herbert	"
1897	Watson, John B.	"

Y.

Date.	Name.	Residence.
	Young, Loring*	Leicester.
1854	Young, Priestley*	Worcester.
1864	Young, Mrs. Priestley*	"
1871	Young, Mrs. Julia	"
1889	Yanchoukoski, John	"
1896	Yeaw, Curtis S.	"

HONORARY MEMBERS.

Date.	Name.	Residence.
	Kenrick, John A.*	Newton.
	Kenrick, William*	"
	Walker, Samuel*	Roxbury.
	Wilder, Marshall P.*	Dorchester.
	Warren, J. L. L. F.*	California.
	Winship, Jonathan*	Brighton.
	Winship, Francis*	"
	Breck, Joseph*	"
	Carter, William E.*	Cambridge.
	Hovey, Charles M.*	"
	Downing, Andrew J.*	Newburgh, N. Y.
	Downing, Charles*	" "
	Cabot, Joseph S.*	Salem.
	Manning, Robert*	"
	Meehan, Thomas	Germantown, Pa.
1871	Leroy, Andre*	Angers, France.
1871	Krelage, J. H.	Haarlem, Holland.
1876	Barry, Patrick*	Rochester, N.Y.
1876	Warder, John A.*	Cleves, O.
1876	Gray, Asa*	Cambridge.
1876	Parkman, Francis*	Boston.
1876	Strong, William C.	Brighton.
1876	Hyde, J. F. C.	Newton.
1876	Flint, Charles L.*	Boston.
1876	Sargent, Charles S.	Brookline.
1876	Thomas, John J.*	Union Springs, N. Y.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1896-97.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Edward L. Davis,	Worcester.
Henry Woodward,	"	Henry Reed,	"
John B. Bowker,	"	Henry Phelps,	"
B. W. Potter,	"	*Freeman M. Marble,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	Lewis A. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	Mrs. John H. Coes,	"
Arthur J. Marble,	"	Mrs. T. L. Nelson,	"
Samuel Flagg,	"	Mrs. Thomas Ward.	"
Edward Hall,	"	Mrs. F. H. Merrifield,	"
H. F. A. Lange,	"	Mrs. T. A. Dawson,	"
Fred. H. Chamberlain,	"	Frederick B. Madaus,	"
William J. Wood,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

George E. Francis, 1899. Nathaniel Paine, 1898. Henry L. Parker, 1897.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, Joseph Jackson.

ON NOMENCLATURE:

Henry L. Parker, George E. Francis, Hermann F. A. Lange, O. B. Hadwen, James Draper, *F. M. Marble, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

O. B. Hadwen, *Chairman.*

Frederick A. Blake,	Henry L. Parker,	Charles Greenwood,
Edward Hall,	James Draper,	Calvin L. Hartshorn,
Albert H. Lange,	A. J. Marble,	Simon E. Fisher,
Mrs. F. H. Merrifield,	George C. Rice,	Herbert R. Kinney,
William J. Wood,		

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.: William J. Wood.

ON FRUITS, ETC.: Henry Phelps.

VEGETABLES: Charles Greenwood.

* Since deceased.

BY-LAWS

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY.

REVISED AND ADOPTED NOVEMBER 17, 1897.

ANNUAL MEETING.

ARTICLE 1. There shall be an Annual Meeting of the Society to be held on the first Wednesday in November of each year.

MEMBERSHIP.

ARTICLE 2. Any member may propose candidates for membership to a Committee consisting of the President, Secretary and the members of the Finance Committee, who shall consider the same, and upon a vote of a majority of said Committee they may become members of the Society upon payment of five dollars for men and three dollars for women and signing the By-Laws of the Society.

EXPULSION OF MEMBERS.

ARTICLE 3. If any member shall reflect serious discredit upon the Society or shall be guilty of any breach of the rules of the Society he or she may be expelled, two-thirds of the members present voting therefor. But no members shall be expelled unless a written notice of the motion be served by the Secretary upon the member personally or left at the member's usual place of abode, at least twenty days before it is acted upon.

OFFICERS.

ARTICLE 4. The Officers of the Society shall consist of a President, three (3) Vice-Presidents, a Secretary, a Librarian, and a Treasurer—(all of whom shall be Trustees *ex-officiis*).

The Officers are to be elected by ballot, to hold their Offices until

the next annual election or until others are chosen in their places, and to discharge the duties of their respective offices.

MEETINGS OF THE SOCIETY.

Article 5. All meetings of the Society shall be called by giving not less than one (1) week's notice in at least one newspaper published in the City of Worcester and the Secretary shall notify by postal card each member as far as their address may be known.

Special Meetings of the Society shall be called by the Secretary at any time, on the application of five (5) members therefor. And at all meetings of the Society twenty-five (25) shall constitute a quorum for the transaction of business.

SECRETARY.

Article 6. His Duties: The Secretary shall keep records of all business transacted at the meetings of the Society and of the Trustees, and also of the admission of members, and he shall call and notify meetings of the Society and of the Trustees, and shall notify persons chosen to office in the Society of their election and the Committees of their appointment, and shall attend to the correspondence of the Society.

TREASURER.

Article 7. His Duties: The Treasurer shall, at each Annual Meeting of the Society, make a report of his receipts and expenditures on account of the Society, and the condition of its finances, and exhibit his accounts. And a Committee shall be annually appointed by the Trustees to examine and audit his accounts and to report thereon. The Treasurer shall give bonds to the acceptance of the Trustees of the Society for the faithful discharge of the duties of his office.

THE LIBRARIAN.

Article 8. The Librarian shall have the charge of all books, drawings, engravings, herbaria, and other articles appertaining to the Library, and shall attend to the purchase, recording, cataloguing, arranging, binding, delivering, and receiving of books; these duties to be performed under the direction of the Library Committee. He

shall, so far as possible, assist those desiring to use the Library in their investigations.

LIBRARY COMMITTEE.

They shall adopt and enforce regulations for the Library and Cabinet, which have been approved by the Society. These regulations shall be affixed to every volume, and posted in the Library.

TRUSTEES.

Article 9. Their Number: The Trustees shall consist of any number not less than twenty-five (25) exclusive of the officers, who are trustees *ex-officiis*—and the exact number of Trustees for the year ensuing, shall be determined at each Annual Meeting.

Their Powers: The Trustees shall have the general charge and direction of the affairs and business of the Society, its funds and property, so far as not otherwise provided for in the By-Laws or at the meetings of the Society; and may appoint one or more exhibitions of Flowers, Fruit or Vegetables in each year, and make all arrangements therefor and for conducting the same, including the appointment of Committees; and may establish premiums and provide for awarding the same, and shall direct the disposal of all articles of a vegetable growth which may be presented to the Society, including the distribution of Seeds, Scions and Cuttings, Layers and Roots.

Their Meetings—Quorum: At all meetings of the Trustees, ten (10) shall constitute a quorum for the transaction of business; and a meeting of the Trustees may at any time be called, on the application of three (3) members of the board to the President of the Society; and all meetings of the Trustees shall be called by the Secretary. There shall be stated meetings of the Trustees, to be held once in three (3) months.

FINANCE COMMITTEE.

Article 10. There shall be chosen at the Annual Meeting of the Society a Committee of three (3), one member thereof to be elected each and every year, to hold office for the term of three years; said Committee, subject to the control and supervision of the Society, shall have the general care and oversight of the lands, buildings and other property of the Society; shall approve all bills against the Treasury before being paid by the Treasurer, except money awarded for Pre-

miums; and shall authorize the Treasurer to invest for the benefit of the Society, in one or more of the Savings Banks of the City of Worcester, any money not appropriated or necessary for the current expenses of the Society.

AMENDMENTS.

Article 11. The By-Laws may be altered or amended at the Annual Meeting of the Society, by a vote of two-thirds ($\frac{2}{3}$) of the members present; provided, that previous notice shall have been given in the call for the Annual Meeting that the subject of an alteration of the By-Laws is to come before the Society at that meeting.

ADIN A. HIXON, *Secretary.*

November 17, 1897.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY.

REPORTS OF THE OFFICERS

FOR THE YEAR ENDING NOVEMBER 1, 1898,

AND

BY-LAWS.

Worcester, Mass.
PRESS OF CHARLES HAMILTON.
311 MAIN STREET.
1899.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY,

For the Year Ending Nov. 1, 1898.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the

Worcester County Horticultural Society:

In presenting the Annual Report for this year, I desire to refer to some of the conditions which have prevailed that are unusual, and which have been beneficial to some varieties of Fruit, Flower and Vegetable, and exceedingly detrimental to others.

This season has been unusually long, nearly seven months having passed without frost, and with an unusual amount of rain.

The vegetables which have been exhibited have been unusually fine, and the number of exhibitors has largely increased; this latter fact being true of every department which this Society recognizes.

We stated last year that our honored President showed Rhubarb of which twelve stocks weighed 22½ lbs., thinking it a remarkable production, but this year he presents for our consideration the same amount which weigh 24½ lbs., and this is but one of the many instances where vegetable growth has eclipsed all former records.

The show of Strawberries, early in the season, was uneven, and did not give promise of average size or quality, but later on they proved as good as any that have heretofore graced our tables.

Of Apples there has been but about a third of the usual crop for the bearing year, and the quality has not been as good as usual. Our Exhibitions have been large, and many fine specimens have been shown. Of Baldwins alone there were forty exhibitors.

While this is not the bearing year for Pears, of some varieties, we have been surprised and pleased at the showing made. Of Sheldons alone there were 41 plates exhibited, and some of enormous size. One of our members, Mr. Arthur J. Marble, showed a Sheldon which weighed 17½ ozs., while Hon. George K. Nichols, of Grafton, sent in a Sheldon pear which weighed 23¼ ozs. There were 27 exhibitors of Bosc pears, and they were as fine as we have ever had. There was a good showing of other varieties, and the number of those competing was larger than ever before.

On the 13th day of October, the Worcester Agricultural Society, to preserve their rights to State Bounty, and to keep good the privileges granted by their charter, united with this Society in an exhibition. The display of fruits, flowers and vegetables was the largest ever shown in our Hall, and were as fine as were ever shown in this section. The display of hot-house grapes and ornamental plants, from the greenhouses of Mr. G. Marston Whitin, of Whitinsville, were exceedingly fine, and added no little to the success of the exhibition. It was rather late in the season for an exhibit of Mushrooms, but Miss Mary E. Atherton showed 86 varieties, and our judge in that department pronounced it a very creditable exhibition, particularly for so late in the season. The interest in this field, which is practically new with us, is increasing, and at nine of our exhibitions during the season they were shown, even when not on our schedule or any premium offered. At this exhibition a dinner was served, at which nearly 150 persons sat down. It seemed a very popular feature of the show, and I would recommend that in future this Society consolidate their October exhibitions, having but one that month, keeping it open from 10 A. M. to 9 P. M., and having a dinner served, as was done this year.

I am of opinion that such a course would add to the interest,

and bring to our Society many new members from the surrounding towns. This question is one to which I invite your careful consideration.

While this has been a very poor year for the cultivation of Sweet Peas—which after July were a failure, Asters and Dahlias—which were very late in blooming, it has been a specially good year for Tuberous Begonias and for Wild Flowers. At one show we had thirteen exhibitors of Wild Flowers, none showing less than sixty varieties, while some placed upon exhibition from ninety to one hundred.

Of our winter meetings I would say they were very interesting and largely attended; those which were illustrated by the stereopticon being attended by enough people to fill our main hall. Inasmuch as the essays are in print, and so far as applied for in your hands, there is no necessity for me to make a review of them in this report.

As last year, the Market Gardeners had the use of our library for their meetings, at which valuable papers pertaining to their business were read, and the Massachusetts Fruit Growers held their annual convention in the hall. Both of these societies have voted their thanks to this Society for its courtesies to them.

I desire to place upon record an acknowledgment to those who, during the past year, have materially added to the success of our exhibitions by furnishing us with useful and decorative materials without any apparent expectation of reward, only that they recognize this as one of the institutions which deserve whatever of success it has attained.

At the time of our Chrysanthemum exhibition the Clark, Sawyer Company furnished us with jardinieres, large vases, silver, glass and china ware, and at all times have willingly loaned from their stock anything of which we stood in need. The John C. MacInnes Company has furnished table linen and decorative materials on several occasions, and has always seemed to take an interest to assist us with whatever we needed in their line. Messrs. O. S. Kendall & Son set up for us four mantels, simply to add to the beauty of our exhibition and make more attractive our distribution of flowers.

The annual meeting of the Society was held Wednesday, November 3, 1897; President O. B. Hadwen presiding.

The election of officers was first in order, a list of whom will be found on the covers of the various publications of the Society.

Reports of the Treasurer, Librarian and Secretary were read, approved, and referred to the Committee on Publication.

Under the head of new business, the following letters were read:

12 Jefferson St., Worcester, *November 1, 1897.*

Mr. A. A. Hixon,
Secretary Horticultural Society.

Dear Sir:—The School Garden Committee of the Civic Club respectfully ask the assistance of the Horticultural Society in encouraging the development of the school gardens of our city.

Much has already been done in this direction by teachers, pupils and friends, and your Society is earnestly requested to arouse greater interest in the subject by offering prizes for the best garden display of Tulips, Hyacinths and the like, and also for the best display of bedding plants. If the Society or individuals thereof can conveniently contribute bulbs, shrubs, etc., credit therefor will be given. I hope that in the interest of the children this request will be acted upon favorably by the Horticultural Society, for I can safely assert that such action will be far reaching in its beneficent results and will be appreciated.

Yours, Very Truly,
JOHN E. LYNCH,
Chairman Garden Committee of Civic Club.

Clark University, Worcester, Mass.

Mr. Adin A. Hixon, Secretary.

My Dear Mr. Hixon:—Last April you will remember my speaking to you on the matter of the Horticultural Society offering prizes of some sort to school children for the cultivation of flower plants. You regretted at the time that, since the appropriations had been made for the year, nothing could be done until this fall. The experiment as tried in the Upsala St. School last spring may provoke a smile on the

part of some veteran horticulturists, but it demonstrated both the feasibility of the plan, in the interest it awakened among both children and parents, and the need of such practical school work in certain sections of the city.

Since I have only a few moments to write, I will ask you to also bear in mind a discussion of the subject which we enjoyed for a good part of an afternoon in October.

The points upon which we seemed to be agreed at the time are as follows:

1. In no better way can the Horticultural Society stimulate interest in its work throughout the entire city than by coming into the most helpful relations possible with the children and teachers of the public schools.

2. The natural result of such mutual relations should be that more young people, as they become interested, would wish to join the Society.

3. That, in the coming annual appropriations, the Society should devote a certain sum to be used as prizes to children in the public schools for the plant or plants, the species to be designated by the Society, which, raised entirely by the child, exhibits the best culture.

My plan is to have the prizes of the Horticultural Society come in to "cap out" similar work in the individual schools. For example I have personally offered certain prizes in the Upsala St. School. I hope that others may do the same for other schools. Now let the Society's prizes be given to the winners in each class from all the schools. Of course, the Society might put smaller prizes into the individual schools, if thought best.

If I can be of any assistance to you or the Committee of Appropriations, as you suggested that I might be, in arranging the details of these prizes, I am at your service.

Yours, very truly,

C. F. HODGE.

3 Charlotte St., *Nov. 1, 1897.*

Considerable discussion followed without any definite plan being offered. It was

Voted to refer the matter to the Trustees.

The question of revising the By-Laws was next considered.

The importance of the question demanding more time than could be allowed this day, it was

Voted, to adjourn to Wednesday, November 17, 1897, 10 o'clock, A. M.

The annual meeting of the Trustees was called immediately upon the adjournment of the meeting of the Society; President O. B. Hadwen presiding.

The first business was the election of committees and judges, a list of which will be found with the officers.

Votes of thanks were tendered the judges, Henry Phelps, William A. Wood, and Charles Greenwood.

Voted to appropriate the following sums for premiums:

Flowers and Plants, ...	$700 00
Fruit, ...	600 00
Vegetables, ...	400 00

with the addition of $300 to be divided between the different departments; $50 to be devoted to Native Mushrooms.

Voted to appropriate for

Winter Meetings, ... $300 00

Hon. Henry L. Parker, Henry B. Watts, John B. Bowker, with the President and Secretary, were appointed a committee to arrange for them.

Voted to appropriate for

Library and Publications, ... $250 00

with an additional sum to bind all unbound books.

Letters from John E. Lynch, of the Civic Club, and Dr. C. F. Hodge, of the School Board, were read and laid on the table until the next meeting.

No other business offered, it was voted to dissolve.

The adjourned annual meeting was held on Wednesday, November 17, 1897, 10 o'clock A. M.; President O. B. Hadwen presiding—

To act upon proposed amendments to or changes of the Constitution and By-Laws. After considerable discussion as to the

legality of some propositions the following changes and additions were adopted:

Proposals for membership shall be submitted to a Committee consisting of the President, Secretary, and the members of the Finance Committee, who shall consider the same and upon a vote of a majority of said Committee they may become members of the Society upon payment of five dollars for men and three dollars for women and signing the By-Laws of the Society.

Expulsion of Members. If any member shall reflect serious discredit upon the Society or shall be guilty of any breach of the rules of the Society, he or she may be expelled, two-thirds of the members present voting therefor. But no member shall be expelled unless a written notice of the motion be served by the Secretary upon the member personally or left at the member's usual place of abode, at least twenty days before it is acted upon.

All meetings of the Society shall be called by giving not less than one week's notice in at least one newspaper published in the City of Worcester and the Secretary shall notify by Postal Card each member as far as their address may be known.

At all meetings of the Society twenty-five shall constitute a quorum for the transaction of business.

At all meetings of the Trustees ten shall constitute a quorum for the transaction of business.

Librarian.

His Duties. The Librarian shall have charge of all the books, drawings, engravings, herbaria, and other articles appertaining to the Library, and shall attend to the purchase, recording, cataloguing, arranging, binding, delivering, and receiving of books; these duties to be performed under the direction of the Library Committee. He shall so far as possible assist those desiring to use the Library in their investigations.

Library Committee.

They shall adopt and enforce regulations for the Library and Cabinet which have been approved by the Society. These

regulations shall be affixed to every volume, and posted in the Library.

Voted to print the Constitution and By-Laws in the Transactions.

No other business presented it was voted to dissolve.

A meeting of the Trustees was held immediately upon the dissolution of the society's meeting; President O. B. Hadwen presiding.

This meeting was called at the request of F. J. Kinney and others who were desirous that the Horticultural Society should be among others who were contributing works of art to the Worcester Art Museum.

It was voted to appropriate one hundred and fifty dollars for the purchase of Casts from the Parthenon Frieze. A letter tendering the gift was sent to T. H. Gage, Jr., Secretary of the Worcester Art Museum; in acknowledgment the following letters were received.

Worcester Art Museum.

Mr. Adin A. Hixon,

Secretary of the Worcester County Horticultural Society.

Dear Sir:—I am in receipt of your letter of Nov. 18, 1897, presenting the Worcester Art Museum with a Cast of the Parthenon Frieze. I beg to assure the Horticultural Society of the grateful acceptance of the gift by the Worcester Art Museum.

You may expect to receive a more formal recognition of gratitude from the Chairman of the Committee on the Museum.

Very truly,

T. H. GAGE, Jr.,

Secretary.

Nov. 18, 1897.

Central Church Parsonage.

Worcester, *Nov. 20, 1897.*

Mr. Adin A. Hixon,

Dear Sir:—As Chairman of the Committee on the Museum, the agreeable duty devolves on me of communicating to the Worcester County Horticultural Society the hearty thanks of the Directors of the Worcester Art Museum for their superb gift of Casts from the Parthenon Frieze.

No casts are more desirable than these, and they will prove a great

and permanent enrichment to the Museum, for which the Directors are extremely grateful.

With much respect, Yours sincerely,
HELEN B. MERRIMAN.

The letters of Dr. Hodge and John E. Lynch were taken from the table. After some discussion it was voted to postpone action to a later meeting.

Voted to dissolve.

A meeting of the Trustees, legally called, was held December 16, to consider the advisability of holding a Chrysanthemum show in November, 1898.

After considerable discussion it was voted to tender the use of the hall to the florists, free of charge, for a Chrysanthemum show. Discussion followed. It was voted to refer the matter to the Committee on Arrangements and Exhibitions, to arrange a schedule for a Chrysanthemum show, and report to the Trustees for their approval.

Voted to pay the premiums as awarded for season of 1897.

Voted to make the combined premiums for fruit, flowers and vegetables for 1898, $2,100 instead of $2,000.

Hon. Henry L. Parker informed the Society that by the will of William Eames they would receive a legacy of five hundred dollars for the promotion of apple culture, to be known as the Eames Fund. Voted to accept the same, and the thanks of the Society extended to his sister, Miss Mary R. Eames, for making it immediately available.

Received from Miss Mary R. Eames a picture of her brother, William Eames, which was accepted with a vote of thanks to Miss Eames.

No other business presented, it was voted to dissolve.

A special meeting of the Trustees, legally called, was held Monday, December 27, to act upon the report of the Committee on Arrangements and Exhibitions as to holding a Chrysanthemum show, and appropriations necessary for the premium list.

Voted to hold a Chrysanthemum show, and to appropriate $200 and the door receipts for the premium list.

Voted not to advertise the show in the papers.

Voted to pay the railroad expenses of George McWilliams, Judge of Flowers.

Voted, as no definite plan could be decided upon in the matter of offering prizes to school children, as proposed in the letters received from Dr. C. F. Hodge and John E. Lynch, to lay it on the table indefinitely.

Voted that the President, Secretary and Judge of Flowers constitute a committee to decide who are florists and amateurs.

No other business offered, it was voted to dissolve.

In reference to the letters received from Dr. Hodge, of the School Committee, and Mr. Lynch, of the Civic Club, your Secretary does not see any practical way for this Society to move in the matter. The school children rarely attend any of our exhibitions, even when invited to do so specially or in the general invitation for any one interested to be present.

Then, again, until such time as some of the scholars of our public schools exhibit something, either wild flowers, when scheduled, or any plant, trusting to our system of gratuities for their reward, I can see no reason why we should attempt to force upon them the planting and care of flowers when during the period when they should receive the most attention the scholars are enjoying their long vacation and would not devote that time to either the theory or practice of horticulture.

There does seem to be a call among our members for some instruction in botany, the arranging of flowers and a more thorough understanding of the science of grafting and budding of trees, and I would recommend that on Saturday afternoons such instruction be given in the library to such as care to attend, whether members of the Society or not, and that this matter be placed in the hands of the Committee on Winter Meetings for such action as they deem best for the good of all interested in the subjects named.

Received from Arthur J. Marble, a portrait of his father, Freeman M. Marble, with the following letter:

WORCESTER, MASS., Feb. 24, 1898.

ADIN A. HIXON, Secretary Worcester County Horticultural Society:

Dear Sir:—I herewith present to the Horticultural Society a por-

trait of the late Freeman M. Marble, for many years a member, and for twenty-five years a trustee of the Society. I feel that to the many friends he had in the Society, it will be a pleasure to see his portrait on the walls, and that it is a fitting tribute to his lifelong interest in the Society.

Very sincerely yours,

MRS. FREEMAN M. MARBLE.

A letter accepting the portrait, with thanks, was sent to Mrs. Marble.

Received from our President, O. B. Hadwen, three paintings, which have been placed in our rooms.

In conclusion, I desire to thank the officers and members of the Society for their hearty co-operation.

Respectfully submitted,

ADIN A. HIXON, *Secretary.*

HORTICULTURAL HALL, WORCESTER, MASS.,
November 3, 1898.

Since publishing the membership list July 1, 1897, the following have been added:

B. J. Bertels,	Worcester.	Mrs. Isaac Hildreth,	Worcester.
Annie E. Brierly,	"	Bertha Hardy,	"
Mrs. G. M. Bullard,	"	Lilian A. Jones,	"
John F. Bartlett,	"	Carrie W. Jones,	"
Edward W. Breed,	Clinton.	Annie E. Jones,	"
Ledyard Bill,	Paxton.	Mrs. Lillie R. Kinney,	"
Mrs. J. A. Balcom,	Northboro.	Oran A. Kelley,	"
Charles E. Bond,	Worcester.	Mrs. Oran A. Kelley,	"
E. F. Corey,	Northboro.	F. E. Lawrence,	Northboro.
Zelotes W. Coombs,	Worcester.	Mrs. Marcella Maynard,	"
Mrs. F. B. Davidson,	"	Mrs. Kate E. Parker,	Worcester.
J. Warren Ellsworth,	"	Clara B. Rood,	"
Mrs. William A. Green,	"	Emma L. Taylor,	"
Mrs. Frank W. Haynes,	"	Frank H. Warner,	"
John B. Hunt,	"	Elizabeth T. Weir,	"
Frank A. Harrington,	"	A. S. Wolfe,	Auburn.
Edward W. Higgins,	W. Boyls'n.	George N. Newhall,	Worcester.
George M. Houghton,	Worcester.	Mrs. Charles E. Neale,	"

The following deaths have occurred since July 1, 1897:

H. J. Allen.
Alzirus Brown.
Elbridge Boyden.
F. J. Boyden, Leominster.
Albert Curtis.
E. D. McFarland.
W. E. Hadwen.
E. B. Hamilton.
Benj. James.
John D. Lovell.
E. L. Brigham.
T. L. Nelson.
Charles B. Pratt.
Edward Proctor, Spencer.
Mrs. Sumner Pratt.

November 1, 1898.

REPORT OF THE LIBRARIAN.

To the Members of the

Worcester County Horticultural Society.

The Library has been open nearly every day the past year, proving a convenience for those who wish to consult the books and having only a limited time. The interest shown among the younger members for books on birds has been supplied by the addition of several.

The following Books, Periodicals, Papers and Bulletins have been added to the Library during the year :—

United States Department of Agriculture : Library Bulletin. Accessions to the Library from July 1, 1897, to June 30, 1898.

Catalogue of the Publications for sale by the Superintendent of Documents, corrected to Oct. 1, 1897.

Library Bulletin : Reference list of publications relating to edible and poisonous mushrooms, compiled by Josephine A. Clark, Assistant Librarian, 1898.

Bulletin : Some common birds, in their relation to Agriculture. F. E. Beal, 1897.

Bulletins : Twenty-two numbers, 1897, from Hon. Joseph H. Walker.

United States Civil Service Commission. Report, July, 1896, to June, 1897.

United States Department of Pomology. Catalogue of Fruits, recommended by the American Pomological Society, 1897.

Field Columbian Museum. Report of the Director for 1896 and 1897.

Botanical Series. Part 4, Vol. 1.

Lake Mohawk Conference on International Arbitration. Fourth Annual Meeting Report.

Maryland Agricultural Experimental Station. Reports; 77 in all; complete set. Robert E. Browning, Librarian.

Report on the San Jose Scale, August, 1898. W. G. Johnson. Twelve copies for distribution.

Michigan Board of Agriculture. Report, 1896.

Michigan Agricultural Experimental Station. Bulletins, Nos. 154 to 161 inclusive.

Cornell University Agricultural Experimental Station. Bulletins, Nos. 139 to 151 inclusive.

Bulletin. Farmers' Reading Lesson. First Lesson.

Connecticut Board of Agriculture. Report, 1896. T. S. Gold, Secretary.

West Virginia Agricultural Experimental Station. Bulletins, Nos. 49, 50, 51.

Arkansas Agricultural Experimental Station. Bulletin, No. 49.

Massachusetts Board of Agriculture. Report, 1897. William R. Sessions, Secretary. Twenty copies for distribution.

Massachusetts Crop Reports. Bulletins, Nos. 1 to 6 inclusive. Series of 1898.

Massachusetts Agricultural College. Hatch Experimental Station. Bulletins, Nos. 49 to 53 inclusive.

Meteorological Observatory. Bulletins, Nos. 104 to 118 inclusive.

Massachusetts Horticultural Society. Transactions. Part 3, 1895. Part 2, 1896. Parts 1 and 2, 1897.

Massachusetts Fruit Growers' Association. Reports, 1897, 1898.

Hingham Agricultural and Horticultural Society. Transactions. Full set. From Edmund Hersey.

Board of Trade, Worcester. Report, 1897.

Parks Commission, Worcester. Report, November 30, 1897.

Worcester Agricultural Society. Report, 1897.

Worcester Society of Antiquity. Town Records, 1845 to 1848. Bulletins, Nos. 1 and 2.

Worcester County Horticultural Society. Two volumes, bound, 1862 to 1870; 1871 to 1880. From Edward Winslow Lincoln.

Journal of Horticulture. Vols. 34 and 35, 1897. English.

Revue Horticole. French. 1897.

Silva of North America. Prof. Charles S. Sargent. Vol. XI.

Mushrooms of America. Students' Hand Book. Edible and Poisonous. Thomas Taylor, M. D. Pamphlet, Nos. 4 and 5.

Moths and Butterflies, 1898. S. F. Denton. Illustrated. Sections 1, 2, 3, 4.

Illustrated Flora of the Northern States and Canada. Vol. 3, 1898. Britton & Brown.

North American Birds. Illustrated. 1874. Baird, Brewer & Ridgway.

Hand Book of Birds. Eastern North America. Illustrated. 1895. Frank M. Chapman.

Birds of North America. Illustrated. 1896. Elliott Coues.

Gleanings on Bee Culture 7 vols. From Fred. A. Blake.

United States Department of Agriculture. Reports. From Miss Sarah A. Powers.

United States Department of Agriculture Reports and American Agriculturists. From Henry Lovell.

Amateur Flower Garden. 1839. Edward Sayers.

Gardening. Charles Marshall. Vol. 1, 1799.

Short Treatise on Horticulture. William Prince, 1828. From the American Antiquarian Society.

Insects Injurious to Vegetation. T. W. Harris, M. D. Exchanged for, with George E. Francis, M. D.

United States Department of Agriculture. Special Reports. Volume 1, 1877, to Volume 17, 1888. From Henry Phelps.

Inaugural Address. Rufus B. Dodge, Jr., Mayor. Jan. 3, 1898.

United States War Revenue Laws, 1898.

Worcester County Atlas.

Worcester City Directory.

Worcester City House Directory.

American Florist.

American Gardening.

Country Gentleman.

Florist Exchange.

Gardening.

New England Homestead.

Massachusetts Ploughman.

Meehan's Monthly.

Rural New Yorker.

State Board of Health Bulletin, Nashville, Tennessee.

Worcester Daily Spy.

Worcester Daily Telegram.

English:

Agricultural Gazette.
Garden.
Gardener's Chronicle.
Gardening Illustrated.

Respectfully submitted.

ADIN A. HIXON, *Librarian.*

HORTICULTURAL HALL,

November 1, 1898.

REPORT OF THE TREASURER.

THE Treasurer of the Worcester County Horticultural Society herewith presents his annual report for the year ending November 1, 1898.

The general business depression of the country has affected this Society as shown by the decreased income from the renting of our hall, but it is confidently hoped that with the expected revival of business in this section, another year will show increased receipts from this source.

Since the last annual meeting the treasurer has received from the estate of our late associate William Eames the sum of $500, which in accordance with a vote of the Society has been invested and will hereafter be known as the William Eames Fund.

The fire in the building adjoining our own has rendered necessary certain repairs, the expense of which has been nearly met by the amount received for insurance.

Our loss by the fire in the theature building was promptly adjusted by the payment to us of $419.

It is a cause of congratulation that the changes and improvements made in the upper part of our building were practically completed before the fire alluded to, for without much doubt they saved our property from destruction.

The past year has called for unusual expenses, owing to the changes and improvements made in the stores belonging to the Society, and these alterations made it necessary to incur other expenses for making safe entrance to our hall.

The expenditure for these purposes was about $10,000, but the increased rent received for our stores makes it a good investment.

This year, too, the insurance on the building and its contents had to be renewed at a cost of nearly $1,300; this was reduced by a rebate in the premium for insurance, brought about by the improvements I have referred to, about $300.

The extensive alterations and repairs made on our building the past year has involved the borrowing of about $13,000; of this amount $5,350 remains unpaid.

This is in addition to the mortgage loan, which now amounts to $8,900.

As will be seen by the detailed report, there is but a small amount of cash on hand; the annual premiums will soon have to be paid, so that it will be necessary to temporarily borrow more money, and the treasurer requests that he be given the necessary power, under the direction of the Finance Committee.

If the date for paying the premiums could be extended for a short period, say till the first of January, it would delay the time at which we should have to borrow and thus be a saving of interest, and the sum received in the meantime from the rent of the stores and hall would very materially reduce the amount we should have to borrow.

There should be some way devised to economize the current year in order that our debt should not be increased, but if possible reduced. I would suggest that it might be advisable to reduce the amount paid for premiums, certainly while the Society has to borrow money to meet the annual expenses and the interest on our loans.

It is probable that the maintenance of our building the coming year will not involve large expenditures, and the large item for insurance will not be needed.

As will be seen by the report the taxes for the past year have been more than for previous years, and with the greatly increased expenditures of the city will be likely to be higher rather than lower.

The detailed report of the receipts and expenditures is as follows:

NATHANIEL PAINE, Treasurer, in account with
WORCESTER COUNTY HORTICULTURAL SOCIETY.

1897.	DR.		
Nov. 1.	Balance as per last report,		$4,237.44
1898.			
Nov. 1.	Receipts to date:		
	From rent of stores,	$5,922.20	
	rent of hall,	3,865.25	
	membership fees,	94.00	
	Chrysanthemum exhibition,	107.00	
	Est. of William Eames,	500.00	
	insurance on building,	419.00	
	rebate on insurance,	308.07	
	For tickets to annual reunion,	170.00	
	interest on deposit in bank,	42.00	
	Money borrowed,	13,350.00	
Nov. 1.	Total receipts to date,		$24,777.52
	Total,		$29,014.96
1898.	CR.		
Nov. 1.	Payments to date:		
	City taxes and water bills,	$ 936.24	
	Premiums paid,	2,380.52	
	Paid judges of exhibits,	150.00	
	for gas,	781.50	
	A. A. Hixon, salary as secretary,	400.00	
	A. A. Hixon, as librarian, &c.,	999.96	
	treasurer,	150.00	
	janitor,	458.33	
	A. A. Hixon, sundry expenses at Hall,	432.58	

Nov. 1.	Worcester Agricultural Society,	100.00	
	Worcester Art Museum,	150.00	
	Interest on loans,	644.29	
	For books and periodicals,	151.23	
	printing publications, &c.,	412.21	
	Repairs and alterations to building,	10,027.67	
	For coal,	91.71	
	Insurance premium,	1,298.15	
	Loans paid,	8,000.00	
	For fire extinguishers,	39.00	
	ordinary repairs,	129.91	
	Expense for annual banquet,	302.65	
	Deposited in Savings Bank (Eames Fund),	500.00	
	Incidentals,	239.07	
		$28,775.02	
1898, Nov. 1.	Cash balance,	239.94	
			$29,014.96

THE FRANCIS H. DEWEY FUND.

1897, Nov. 1.	Balance of fund,	$1,081.80	
1898, Nov.	Interest to date,	43.25	
1898, Nov 1.	Present amount of fund, invested in Savings Bank,		$1,125.05

THE WILLIAM EAMES FUND.

1898, Nov. 1.	Amount of fund,	$500.00

NATHL. PAINE, *Treas.*

November 1, 1898.

WORCESTER, Nov. 3, 1898.

We the undersigned, Auditors of the Worcester County Horticultural Society, hereby certify that we have this day examined the account of the Treasurer, and find the same to be correct and properly vouched, and that the cash balance is accounted for.

HENRY L. PARKER.
F. H. CHAMBERLAIN.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1898-99.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; CALVIN L. HARTSHORN, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Simeon E. King,	Millbury.
Henry Woodward,	"	E. M. Bruce,	Leominster.
John B. Bowker,	"	George McWilliams,	Whitinsville.
B. W. Potter,	"	Edward L. Davis,	Worcester.
Frank J. Kinney,	"	Henry Reed,	"
Alden Rice,	"	Henry Phelps,	"
Arthur E. Hartshorn,	"	Luther R. Eames,	"
George F. Hoar,	"	Frederic G. Stiles,	"
George Calvin Rice,	"	John Midgley,	"
Louis J. Kendall,	"	Stillman H. Record,	"
William O'Connell,	"	Simon E. Fisher,	"
Charles Greenwood,	"	Lewis A. Peters,	"
Arthur J. Marble,	"	William J. Wheeler,	"
Samuel Flagg,	"	J. Lewis Ellsworth,	"
Edward Hall,	"	Frederick B. Madaus,	"
H. F. A. Lange,	"	Mrs. John H. Coes,	"
Fred. H. Chamberlain,	"	Mrs. T. L. Nelson,	"
William J. Wood,	"	Mrs. Thomas Ward,	"
Henry Rich,	"	Mrs. F. H. Merrifield,	"

STANDING COMMITTEES.

ON FINANCE:

Fred. H. Chamberlain, 1900. George E. Francis, 1899. Nathaniel Paine, 1901.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, M.D., Joseph Jackson.

ON NOMENCLATURE:

O. B. Hadwen, George E. Francis, Albert H. Lange, Arthur J. Marble, George McWilliams, Herbert R. Kinney, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

Charles Greenwood, *Chairman.*

Frederick A. Blake,	Henry L. Parker,	Herbert R. Kinney,
Edward Hall,	James Draper,	Henry Rich,
Albert H. Lange,	Arthur J. Marble,	George E. Francis, M.D.,
Mrs. F. H. Merrifield,	George C. Rice,	George McWilliams,
William J. Wood,	Calvin L. Hartshorn,	*Mrs.* George McWilliams,
	Simon E. Fisher,	

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.: George McWilliams, Whitinsville.
ON FRUITS, ETC.: Henry Rich.
VEGETABLES: Charles Greenwood.
NATIVE MUSHROOMS: George E. Francis, M.D.

COMMITTEE ON WINTER MEETINGS.

Henry L. Parker, John B. Bowker, Henry B. Watts,

President Hadwen, and *Secretary* Hixon.

ESSAYS.

A. D. 1898.

WORCESTER COUNTY
HORTICULTURAL SOCIETY.

6th January, A. D. 1898.

ESSAY

BY

O. B. HADWEN, President.

Subject: — Rural Adornment with Trees and Plants.

Here and there in the suburbs of cities and country towns are seen many attempts at rural andornment and ornamentation with trees and plants, delighting with their unexpectedness, and pleasing by their simplicity, and harmonizing with nature in every degree of landscape.

Also a neglect of these attractions is conspicuous along the highways and byways which are by far too manifest, by the utter want or neglect to use the means which God and nature and sunshine have so abundantly placed within our scope. And yet the trees, the flowers, the lawn, the water, and a thousand kindred charms which only await development when nature is assisted by man, are to ripen the instincts and cultivate the finer art of rural life, and encourage the more delicate graces of home and rural surroundings.

What prevents giving our farms, our homes, our public and private grounds, an air of simple or elaborate adornment, in accordance with the means and time at our disposal?

We may make our grounds, however situated, large or small in area, so fitted to its exposure, its altitude, its simplicity, so governed by judicious planting and neatness, so rich in leaf and flower, an enduring and refining feature in the landscape that

Heaven itself will commend, and sunshine and showers will nourish, and the passer-by will forever praise, and the grounds are themselves the primary and important feature in rural and city life.

The liberal use of deciduous and coniferous trees and plants is imperative in landscape art, but should be carefully studied and selected with a view to the most charming effect. It is an art that should be accompanied by practical training in planting the many different kinds of trees, widely differing in their habits, by exposure and soil, to thrive well, and for years. Holes for trees and shrubs should be large and well prepared, giving the roots plenty of room for development, and a mound in the centre of the hole for the tree to rest upon, giving the lateral roots a downward tendency, and preventing an open space under the tree, an important feature very much neglected.

Judicious pruning should be given at the time of transplanting, vigorous pruning with hard wooded sorts, and while they are unsightly at first, they amply repay with increased growth and luxuriant foliage.

In planting parks with a view to their future development and general use for the public, the raw materials of no two parks or grounds can be found alike; good soil is one of the chief requisites for all grounds, if they are to be adorned with permanent trees or shrubs, to keep in harmony with the natural contour of surface, and the face of nature should be the guide to its embellishment. The higher art is simple in expression, and trees or plants should be placed in moist or dry situations, as experience teaches best suited to their growth and longevity. Planting for immediate effect or crowding trees together is not well adapted to openness, in part essential to permanent landscape. It must soon be followed by severe thinning out, the unshapely trees and shrubs always out of harmony where beauty should reign at every turn. For God makes the trees and man makes the harmony.

Parks are of use to bring the city and country in closer proximity, and to contribute the greatest enjoyment for the greatest number should be the law. The best parks are simple in their

expression, the best adornment is with groups of trees or shrubs found to thrive in the locality, either naturally or by art. Simplicity of design and economy of maintenance are essential conditions too often overlooked. If possible, ornamental water should be a feature, as no landscape is complete without ponds and bridges. Fountains and jets often are exceedingly beautiful, commending themselves to the well-trained eyes of practical people.

Now then, what are some of the best trees and shrubs to plant, for the development of landscape is always commensurate with the advancement of the most cultivated thinkers and general knowledge between numbers of men engaged in this pursuit?

The maples, both indigenous and exotic, comprise many sorts. Indeed, there is no family of trees more extensively planted or that gives greater satisfaction. Their shapely form and variety of foliage, with most exquisite coloring, renders them popular. Among the Norway family of maples the Schwedlerii is proving a great acquisition, with its robust habit of growth, large and luxuriant leaf opening in spring a bright crimson, unlike any other maple in its season, in autumn turning to a delicate bronze, in happy contrast with the autumnal tint of other trees.

Then there is the Reitenbachi, almost the exact counterpart of the Schwedlerii, opening green in spring and gradually turning to bright crimson in autumn.

The Geneva, a native of this country, of the Norway type, comes out a rich crimson purple in spring, retaining its color through the season.

The Sycamore maple, variety *Pupuria*, is of vigorous habit. The leaves are a fine green on the upper side and colored purple on the under side, a beautiful tree in a gentle wind.

The Ginnala is a charming maple of shrubby growth, with deeply cut leaves and intensely bright crimson in autumn.

I have growing on my place eighteen sorts of maples, giving great variety of form and coloring.

We have no more impressive tree than the oak, often retaining its foliage during the winter. They are more difficult of transplanting than the Maple. They require hard pruning when

planted, almost to the pole. The White oak, Scarlet oak, Red Oak, Yellow oak, Chestnut oak, Pine oak, are the leading sorts. There is no class of trees that grows so stately and are longer lived than the oaks.

The Beeches *(Fagus)* are very valuable trees for ornament, differing in their variety from other trees, being peculiar in their tendency of retaining their leaves during the winter ; and, either green in leaf or browned by frost, form a picturesque family the year round.

The White, a native beech, is indigenous here on high or moist places, but rarely bears nuts as it does further north. The branches extend outward from the trunk in a horizontal position ; the leaf, a light green, is graceful in its effect.

The English beech is more compact and of slower growth, is stronger in form and the foliage of deeper color, remaining on the trees during the winter and until the new leaf puts forth in the spring.

The Purple beech is so strikingly beautiful in the opening leaf that it is desirable in any grounds, and always an object of admiration. They prove to be long lived but will bear liberal dressing of manure, which has a marked effect in the color of the foliage.

If I ever coveted a tree, the property of another, it was the Purple beech ; and I am not prepared, either for the lawn, or for a conspicuous position in any grounds, to assign the Purple beech a second place. It is said to have its origin in Germany. When properly grown, it has so many desirable characteristics that no grounds of any pretensions should be without it. I know of a tree where the lower branches extend fifty feet. In early spring, when the leaves are intensely purple, and when agitated by wind in strong sunlight, its brilliancy is unequalled by any of the tree family, and would vie successfully with any of the gorgeous tints of other trees in autumn.

The Fern-Leaved beech is the most charming and shapely of the beeches ; with its leaf so artistically cut, and furnished in the greatest abundance, it makes a striking object of symmetry and beauty, and withstands the ice storms without injury ; a

very pleasing tree to the cultivated eye, and sure to be marked in any collection as one of nature's best works in the beeches. Its growth is slow unless planted in good soil, when it makes a vigorous growth.

The American beech, found more or less over our northern regions, is much admired for its singularly neat and airy foliage, which often adheres to the branches during the winter. When in groups, they are delightful in their many excellent features; always in full foliage, as but few insects injure them.

The lindens (*Tilia*), once so popular, are now much less planted. The American, commonly called Bass, makes a stately tree, with a large leaf; and in July their flowers fill the air with delicate perfume.

The birches are an ornamental class of trees quite distinct in their habits of growth and foliage, prove well adapted to many situations and are charming in the landscape.

The Cut-Leaved birch is most esteemed and more largely used for planting. It makes a graceful tree of upright and partially weeping growth. The graceful sweep of its pendulous branches, with its beautifully cut and varnished leaf and with its snow-white bark, it must rank queen of the birches.

The Canoe birch about here is in its southern limit, and does not attain the same diameter of trunk that it does in more northern regions. I have watched the growth of one specimen for nearly forty years, until it is now almost two feet in diameter; its clear white papery bark giving a marked effect to the trunk, well furnished with branch and leaf. Where it flourishes, it is truly a picturesque tree, of spreading, graceful form, and its cultivation should be encouraged.

The Black or Sweet birch is the very first of the family that the boy learns to recognize, as he bites the fragrant bark. The tree has many fine features, and is beautiful in its golden racemes and airy leaf; it is deservedly finding its way from the wild to cultivated grounds, and thrives therein.

There has been recently introduced, I believe from England, the Purple birch. Both bark and leaf are intensely purple, promising to cope with the Purple beech. With purple tint and

glossy leaf it is conspicuous. My own is quite young, but of thrifty growth, and thirty-five feet in height.

The Magnolia.—A few of them thrive here and are among our most beautful trees. I have thirteen different kinds growing on my place. The Magnolia Acuminata grows perfectly well, is profusely clothed with large green leaves, and in June flowers; the fruit resembling a small cucumber.

The Magnolia Tripetala, after the first few seasons of growth, is found hardy, its beauty being in its very large tropical leaves, with large white flowers six or eight inches across.

Magnolia Soulangeana and Conspicua.—But few, if any, trees are more ornamental than these, when in bloom; being filled with white and pink flowers, four or five inches across, before the leaves unfold; they are particularly well adapted to small grounds.

The Tulip Tree *(Liriodendron tulipifera)*.—The tulip is a great favorite on extensive grounds, and being of rapid growth soon becomes a tall, stately tree, with leaves of peculiar cut and freshness. The flowers open late in June, are fine, tulip shape, of greenish yellow tint. I have seen trees near Philadelphia with trunks nearly four feet in diameter. They are, by the way, a difficult tree to transplant.

Then I admire the Gingko, or Salisburia, with all its foreign caste, its Oriental primness and precise regularity of growth and habit, with peculiar shell-like leaves of pea green, seemingly bearing the stamp of its native country, patient and polite.

The Larch *(Larix)* is considerably planted as an ornamental tree; its rapid and symmetrical growth soon gives shade and shelter.

The beautiful class of trees commonly known as coniferous evergreen, are indispensable in the landscape during the winter season. With the newer sorts of more recent introduction they are becoming great favorites with many planters. Their various shades of color during the year places them in the very front rank in ornamental planting.

The Pines, Spruces, Cedars, Firs, Arborvitæs are so well known that I will omit them to make room for some of the new

sorts: Picea Pungens, or Colorado Blue Spruce, growing at an altitude of eight to ten thousand feet above the sea level, is one of rare beauty; its silvery-blue color and well-furnished pyramidal form render it one of the most conspicuous and charming of the evergreens, the very Conifer of the storms.

The Concolor is from Colorado, and one of the finest and most graceful, and often as blue as the Pungens. It is slowly but surely taking a high rank in ornamental planting.

Nordmans Silver Fir, when well established, is an impressive evergreen, of strong, symmetrical habit, dark, massive foliage with lighter shade underneath.

The Douglas Spruce, Engelmanni, is indigenous in the Rocky mountains. Also we have from Japan a few sorts that are not only proving hardy but more pronounced in many ways than others. Abies Veitchii is one of the finest. Abies Alcockquiana is a magnificent tree of the greatest value. Picea Polita, a Japanese variety, with a pleasant shade of deep green, quite distinct. The Umbrella Pine, also from Japan, with long, leathery leaves and very compact, forms a very singular tree. Two fine specimens may be found at Elm park. It is too high priced for general use.

FLOWERING SHRUBS AND PLANTS.

No grounds are complete without them. Each part of the shrubbery should have a distinct character of its own, which is easily done by grouping instead of mixing several sorts in one group. Large grounds may have combinations of groups, but plenty of space is indispensable for well-grown plants. The charm of a garden of hardy plants is complete only in the constant change in the season of bloom from spring until late autumn. Each week to find some new phase of floral beauty, and the expectation of what plants will be in bloom the following week, develops increasing interest through the season. It is well for small growers to commence with a few kinds most easily grown and add to them as interest develops from season to season.

Among the hardy flowering shrubs that are always satisfactory

may be mentioned the Deutzias, Spireas, Azalias, Rhododendrons, Berberis Thunbergii, Japan Quince, Weigelia, Exochorda Grandiflora, Forsythia, Hydrangea Paniculata, Syringa, Rosa Rugosa, and Hybrid Roses, the Lilacs, double and single, Viburnum plicatum, and Viburnum Tomentosum from Japan, the Laurel, upright and climbing Honeysuckles, Wisterias, &c. Among the hardy herbaceous plants are the Pæonies, with hundreds of distinct sorts, Irises, Lilies, perennial Poppies, Primroses, Anemones, Narcissi, Campanulas, Pyrethrums, Phloxes, and very many others, forming a succession of bloom from early to late. Color, fragrance and profusion of bloom may be had throughout the season as experience broadens the mind of the cultivator.

There are no grand or well-grounded rules which must be rigidly followed in planting. The due blending of colors should be well considered in planting both trees and flowering plants, with a view to the most pleasing effects. Indeed, there is scarcely an end to the simple or artistic combinations with which grounds may be adorned.

One of the chief phases of adornment of our grounds is to keep in close alliance with nature, with the unwritten law which governs and adorns each place unto itself, "as nature assisted by man"; which will invent and form those pleasing surroundings that men are delighted in; out of this develops a certain unconscious intelligence, as yet rarely taught in school or college, but emanates from hard thought, largely intuitive, which is born with a sense of beauty of form and harmony of arrangement.

The time is coming, even now is, when the value of every farm or homestead will be measured by the art and adornment of its surroundings; where men spend the most important years of their lives, there is an intrinsic value measured by the refining influence, especially to the young. The sanctity of the home is measured by its surroundings, without as well as within.

Ornamented grounds are yearly encroaching upon former neglected homesteads; tasteful dwellings are seen within plantings and groupings of coniferous and deciduous trees, with their

exquisite sheen, which gives them such attractiveness and quiet beauty. Roofs that shelter the manly and gentle virtues that are nurtured in refining homes, the intelligence and influence generated around these hearthstones, are the lineal descendants that contribute to the useful pursuits of life.

Home grounds and farm lands are only waiting in anticipation the finer charms of adornment which will mark their future, by the simple application of more educated tastes and rural aptitude are sure to bring forth, to quicken the fine instincts of civil life, with an array of good sense, and beautiful objects to behold in the landscape, which is beautified if in true accord with nature, and helps to adorn her. Wherever I see good tree-planting and well-kept grounds, I know they teach the value of rural life, that brings men into daily contact with nature, for every place must have its especial adornment, its own interpretation of the skill of the planter, and the amount of care bestowed, and those who cultivate best will be quite apt to get the most out of life.

I will close with the oft-repeated advice of the old Scotchman to his son: "Jack, Be planting a tree, it will be growing while you are sleeping."

13th January, A. D. 1898.

ESSAY

BY

ROBERT FARQUHAR, Boston.

Theme:—The Yellowstone Park, Oregon.

Illustrated with Stereopticon Views.

Last season I devoted my vacation to a trip to Oregon and Yellowstone Park with a camera and notebook, the result of which I will try and give to you this afternoon.

The natural endowments of Oregon are apt to strike the easterner with amazement. He finds himself in a land of great forests, of lofty mountains, noble rivers and an atmosphere so clear that the Pacific ocean is visible at a distance of seventy miles. The soil of the valleys is remarkable in fertility, and although there are great extremes of temperature, fruits and vegetables attain an enormous size. The legislature has been particularly careful of the horticultural interests, and laws for the inspection of seed and imported plants have had the result that insects, troublesome in the east, are unknown there.

The raising of prunes is a recent industry, and promises well, ordinary soil yielding a uniform profit of $100 per acre. Fruits in great variety are raised in Oregon, and the display representing the State at the world's fair in Chicago was among the best exhibits of fruit seen at the big fair.

Seattle and Portland are the New York and Boston of the far west, and are destined before many years to become great centres of industry and population. In the great falls of the Willamette River, which washes the suburbs of Portland and falls into the Columbia, that city has the second largest single water power of

the country, Niagara alone excelling. The falls are capable of furnishing 75,000 horse power. Already large power works are constructed and furnish electric lighting and power service and drive the machinery of many mills and factories.

We climbed the steep sides of Mount Hood, the famous landmark which towers in the clear air fifty miles east of Portland, although it seems much nearer. The crater is quiescent, but not dead, for steam issues from the crevices of the rocks, and in places it is hot enough, though far above the snow line, to cook on the rocks.

Returning to the great river the party ascended in steamers and got a good insight into the vast salmon fisheries. Some of the big fishwheels net their owners as much as $30,000 each year by their catches. As the fish cannot make headway against the mighty current, the machines are built along the banks, where the stream turns the framework wheels armed with wire net flanges.

The fish, swimming into the nets, are carried up and thrown into a big pit, whence they are scooped out by machinery and loaded for transportation to the canneries. Last year 15,000,000 cans of salmon were shipped out of Oregon for consumption in all parts of the world. The fish are so plentiful that Indians with long poles armed with sharp hooks spear the fish and make $4 and even $5 a day by selling the fish at two cents a pound to the canneries.

The scenery along the Columbia cannot be excelled by any river scenery in the world. Its cliffs dwarf those of the Hudson and the Rhine, as the river rushes through great gorges of basaltic rock that have been worn into peculiar formations by the action of the torrent for ages. The great falls of the Columbia through the Cascade Mountain range are passed in canals and locks, and the smaller steamers are thus enabled to mount high up the big river.

The Indian associations of the Columbia are plentiful and interesting. The aborigines are long-lived, and it is not uncommon to see men and women who have passed the century mark. But their lodges and manner of life show no improvement from

contact with the whites. Rattlesnakes abound in Oregon, and the Indians of the old days used to inoculate pieces of flesh by getting the snakes to bite, and then they dipped their arrow points in the poison to give a death wound to their enemies.

The Indians of that locality buried their dead for generations on an island in the river, which is covered with a multitude of skeletons of bodies placed there on slight wooden platforms, which have fallen, leaving the place a wilderness of skulls, bones and battered sticks.

I would advise anybody going to the Yellowstone to carry materials for preserving flowers and grasses, of which the production of the famous region is luxuriant and greatly varied, from tropical growths of the hot midsummer to the little flowers that flourish only alongside the ice and snow. While visitors are not allowed to touch cultivated flowers, no interdict is placed on the wild flowers and handsome grasses, and a splendid collection may easily be obtained.

From the great fall of the Yellowstone River for twenty miles the cañon winds in and out between high walls so steep and lofty that from the bottom the stars can be seen at any part of the brightest day.

In the park is one of the most unique hothouses in the country. It is a strong wooden building constructed over a hot spring, and although in midwinter snow from fifteen to thirty feet deep buries the building from sight, the spring is perennial and keeps the temperature of the interior at summer heat, and the caretaker in the spring finds the lettuce and other crops ready for salad making, in spite of the snow on the roof.

20th January, A. D. 1898.

ESSAY

BY

PROF. L. F. KINNEY,

OF THE RHODE ISLAND AGRICULTURAL EXPERIMENT STATION.

Theme:—Rural Economy.

SCIENCE consists largely in the collection and classification of facts. Viewed in this light it cannot be said that we have as yet a science of horticulture, although about fifty men in our country are studying the subject scientifically. We have proceeded in this study far enough, however, to be privileged to say something about rural economy. Civilization is the offspring of economy, and economy consists in the judicious expenditure of labor and capital. Consequently, real economy demands that the production of the necessaries of life shall be accomplished by the shortest and quickest methods. As an example, take the crop of winter lettuce, which is grown by a limited number of men, but it has reached a development in this country higher than anywhere else in the world. Lettuce grown in the field all winter is not much better than cabbage. Lettuce was grown that way probably by the early Romans. But there was no progress in lettuce raising until about the middle of this century. The plants simply lived in dormant condition in the earliest hothouses.

Cold frame lettuce was raised in the decade from 1850 to 1860, and by that time the market was well supplied and the improvements came to a standstill. Next the farmers put the lettuce into the hot frames in September, and got three crops

out of the year. Then from the hotbed to the hothouse was an advance that required more capital. The next step in the evolution was substitution of larger panes of glass and smaller supports, then hot water heating and last steam heating.

From the start the cost of production of lettuce has been decreased. You can buy lettuce in the markets at half what was charged fifteen years ago, still leaving a profit to the farmer. The result is that lettuce is no longer a luxury, but a common article of diet.

The culture of celery, a vegetable which was unknown until modern times, and was always grown in trenches until 1884. At that time the two self-blanching varieties — the "Paris Golden" and the "White Golden"—were introduced, and since with these varieties the blanching was done by boards instead of by the laboriously heaped trenches, the industry has received a great impetus. For a short time the retail price remained the same, and the pioneers in the new process grew rich; but now over-production has ensued, and only in the most favored localities is celery grown at a profit.

Grape-vines do not flourish well in Southern Rhode Island, while spinach does. That is one thing we ought to study more on our farms, for it is certain that particular crops flourish in certain localities and under certain climatic conditions.

They say a man who causes two blades of grass to grow where one grew before is a public benefactor, but I can't see it unless the raiser makes a profit thereby.

The peach, for instance, is peculiarly susceptible to conditions of environment. Application of this principle brings about prosperity.

Considering the building of roads, it may be that the labor of building a stone road may amount to more than the amount of labor set free by the completed road. So it seems to me, that the back districts should be encouraged to build the easier forms of road. It is a truth that more a road is used, the more easily it can be repaired.

About $1,000,000,000 worth of forest products are being consumed annually in the United States, and thus far there

is no systematic effort to conserve the supply. Is it not economy to use the roadsides to plant trees?

Trees should be planted along the roadside. They make the country attractive for pleasure seekers,—thus indirectly helping the farmer. It is not economy to use expensive machinery for small farms, which wears out by disuse and neglect in winter so rapidly that its utility in summer is not adequate compensation.

27th January, A. D. 1898.

ESSAY

BY

MISS HELEN A. BALL, WORCESTER, MASS.

Theme:—Birds of the Farm and Garden.

I AM very glad indeed to hear that there is an interest in the Society in the study of birds. It seems to me that if a money value could be placed upon birds, as Mr. Kirkland has placed one upon the toad, that there would then be no question as to their being protected. I mean, of course, a money value upon the live bird, unfortunately the dead bird has a money value, but the dead bird or feather is very perishable property that rapidly depreciates, as when one has purchased a dead bird she cannot sell it at the end of the season for what she paid for it at the beginning. I think we only need to prove that the live bird is more valuable than the dead one to ensure its protection. In the case of the toad, very definite data was obtained by Mr. Kirkland from stomach examination, and upon that he bases his money value—from the number of cutworms alone that he destroys. He said that it was worth $19.88 to the gardener every season. We have not just the data to place a value upon each bird in just that way, but very definite examinations have been made by the Department of Agriculture, and so we have exact statements to make in regard to the value of the bird and the insects they destroy.

The Bluebird is placed at the top of the list by systematic ornithologists and is really one of the first birds in importance in its destruction of insects. Nearly three-fourths of its food is animal,—one-sixth of the food is of caterpillars, and one-fourth,

grasshoppers and crickets. The rest of the food is mainly of wild berries. There is no cultivated fruit at all on the list of this bird's food, and it is one of the most valuable. Fortunately, this last year it seems to have regained in numbers what it lost two or three years ago in the winter when he suffered so much from frost in the South, and the cold weather cut off the food supply there, and great numbers of them died from starvation. It is often worth while to know the vegetable foods and fruits that it lives upon so as to be able to plant them in order to attract birds. The Bluebird enjoys choke cherries, dogwood, bush cranberry, huckleberry, greenbrier, Virginia creeper, juniper, bitter-sweet, pokeberry, false spikenard, partridge berry, and the wild sarsaparilla.

The Robin is a very familiar bird of the gardens and orchards, and is accused of eating cultivated fruits to a large extent, but examinations show that less than five per cent. of his food is grown by man. Nearly one-half is animal, including wasps, ants, bugs, spiders, angleworms, and a large per cent. of grasshoppers and crickets and caterpillars. He also eats great numbers of March fly larvæ, so preventing injury to the hay crops. He has been supposed to feed largely on angleworms from his well known habit of running over the grass, but we find that the angleworm forms a small per cent. He picks up a number of cutworms and an army of insects that lie in the larvæ state in the ground. Professor Forbes has asked the question: "Will the destruction of seventeen quarts of average caterpillars, including at least eight quarts of cutworms, pay for twenty-four quarts of cherries, blackberries, currants and grapes?" and someone else makes the statement that "He is a poor business man who pays $10 for what he knows must later be sold for fifteen cents or less." Yet I have known of instances where a robin that had saved from ten to fifteen bushels of apples that were worth a dollar a bushel, by clearing the trees from canker worms in the spring, was shot when he picked one of the apples that he had saved for the ungrateful owner. The Robin is fond of wild fruits, and these may be planted to draw his attention from the garden fruit—dogwood and wild

grape, wild black cherry, choke-cherry, mulberry, cranberry, blueberry, huckleberry, hollyberry, elderberry, hackberry, service-berry, spice berry, hawthorn, bittersweet, Virginia creeper, mountain ash, barberry, pokeberry, strawberry, bush-berry, juniper, and bayberry.

The two Thrushes that we have here through the summer, that is, the Wood Thrush and the Wilson Thrush, are almost wholly insectivorous. They feed to some extent upon wild fruit and do not come so close to the orchards as the other birds, but still they are never far from the habitations of man. The Thrushes here come every year by Millstone Hill, and Green Hill, and I know that they are in the south part of the city and also in the west. I found a pair of them at Elm Park one spring. The shrubbery has all been cut away just where I found them. It is very unfortunate to lose the lower branches of the trees and the thick shrubbery where the birds go for food. They seek those places especially for protection and need them to resort to. They do a great deal of good in eating the larvæ of a great many insects.

The little Kinglets are very valuable. They are the gleaners of trees especially, and we usually see them about the trunk and the limbs of the trees, pecking in all the crevices of the bark. They are very industrious indeed. The Golden-crowned Kinglet is a winter bird and is here all through the winter, and the Ruby-crowned comes in the fall and the early spring. The Ruby-crowned has a wonderful song for so tiny a bird. It is one of the most wonderful things to find such a volume of song coming from such a scrap of a bird.

The white-breasted Nuthatch is quite common here and is a resident, that is, lives here the year round. It is distinguished from the Woodpecker by having almost no tail. The wings come down even with the tail. Its habits are quite different from those of the Woodpecker, and it is almost always coming down the tree or hanging from the inside of the branches. The small one of Canada comes to us in the winter and last winter was very abundant indeed. It was found in large numbers by the Lake, and in the western part of the city. The winter

birds are apt to be variable in coming to us. The white-breasted Nuthatch gets its name from its well known habit of fastening a nut into a part of the tree and hammering it with his bill to break it, in order to get the grub of the insect inside rather than for simply food itself.

The Catbird is a common bird of the garden, and is often looked upon as an unwelcome visitor because he enjoys fruit. Experiments have shown that he prefers mulberries to strawberries and cherries, hence, if Russian mulberries are planted in henyards or pig-pens, the hens and pigs will not only be provided with excellent food, but the Catbird will be attracted thither, in this manner protecting the more valuable fruits. The Catbird arrives about the first of May, and during that month he does valuable service. Ants form eight per cent. of his food; thousand-legs, ten per cent.; May beetles, eight per cent.; ground beetles, eight per cent.; caterpillars, eight per cent. Through June about the same proportion is maintained of animal and vegetable food. As soon as mulberries, raspberries, cherries and strawberries ripen, the birds naturally forsake the dried fruits, that is, those that have dried through the winter. About this time in May one-third of its food is gleaned from berries of the previous summer,—sumach, smilax, and other fruits that have been hanging all winter. As soon as grasshoppers come, grasshoppers and crickets form a large proportion of the food, for ten per cent. of all the food taken during the latter part of June is of grasshoppers and crickets. During the first twenty days of July, the Catbird is believed to take the maximum of cultivated fruit. Raspberries and blackberries are the favorites, but by the middle of August these give way somewhat to black wild cherry, dogwood, and elderberry. The Catbird's food consists of three per cent. of carniverous wasps and wild bees that carry pollen from flower to flower, but this is counterbalanced by the destruction of weevils, thousand-legs, and plant-eating bugs. Catbirds have a liking for the easily obtainable predaceous ground beetles which are supposed to be beneficial to the farmer, but the loss of these insects is made up for by the destruction of beetles related to the May bee-

tles. The Catbird subsists largely on fruit of which about one-third is taken from cultivated crops. It eats caterpillars, grasshoppers, and crickets, with a small percentage of leaf-eating and click beetles. The volume of these insects destroyed is equal to only one half of that of the cultivated fruit eaten.

The Brown Thrasher, which is a close relative of the Catbird, is certainly more valuable, as the results of investigations show, as to the fruit it destroys and the injurious insects. The quantity of food taken from cultivated crops amounts to only eleven per cent., eight per cent. of which is fruit and the rest grain. The farmer is more than compensated for this loss by the destruction of an equal bulk of May beetles which if allowed to live would have done much more harm than the Thrasher, and left a numerous progeny for next year. Grasshoppers, crickets, weevils, click and leaf beetles form a large proportion of the food. It destroys twice as many caterpillars as the Catbird. The Brown Thrasher has a fine soft note, especially contrasted with that of the Wood Thrush in the ecstacy with which he pours it forth. The Brown Thrasher is often called the Brown Thrush, but it is not a Thrush properly. The Brown Thrasher and the Catbird belong to the Mocking-bird family. They are certainly characterized by the song that differs very much from the strain of the Thrush. Thoreau speaks of the Wood Thrush as having a song of fine modulation. He gives vent to a beautiful strain, and then pauses in order to enjoy it himself perhaps, while the Thrasher pours forth a perfect volume of ecstatic song, and then at the end of the nesting season, a very brief period of song, he seems particularly depressed in spirit and skulks away and hides among the bushes.

We have a large number of little Warblers that are wholly insectivorous, and do a great deal of good in the orchards, in picking up the tiny insects that infest the buds and plants, the flower buds on fruit trees and all the cultivated plants. These Warblers are called the Myrtle Warblers, and have three or four distinct spots of yellow. They are migrants, coming to us in the spring and in the fall, and last fall I found a large flock of them. We have a large number of them beautifully colored.

They have not so fine a song as many of the other birds, but it is very sweet. The Wild Canary, the Redstart, the Black-throated Blue, and the Oven bird that is very familiar from its call, all these are very valuable, simply from the number of tiny insects they destroy.

The Vireos are common. This is the Red-eye that is common in all of the shady trees in the city streets, and so common throughout the country everywhere. It is often called the "Bird of the Maples" because he seems to prefer that tree to any of the other hardwood trees. They build their nests in the bark of the branches, and they usually use some newspaper for this purpose. Birch bark is used in some cases, but they are quite sure to use a bit of newspaper. Vireos rank next to the Cuckoo in the destruction of caterpillars, and they are of great value from their fondness for bugs, weevils, May beetles, inch-worms, and the leaf-eating beetles. There are three or four varieties that are known here. This is the Yellow-throated that is almost as common as the Red-eye. It has a song very closely resembling that of the Red-eye. We might say that the Red-eye's song is inspiring and the Yellow-throated's loud in quality, but they are very similar indeed. There are also the Blue-headed or Solitary Vireo and the Warbling. The Warbling is very common indeed in elm trees.

This is a bird that visits us in winter, coming north late in the fall and staying until the first of April. The Shrike, or Butcher bird has rather a bad reputation, because he kills small birds by paling them on the thorns of thorn bushes. It is not known exactly for what reason he does this, as he does not seem to return to them. The thorn bush is often spoken of as the "Shrike's Larder." The Shrike does a great deal of good in catching mice and also in catching English Sparrows and disastrous caterpillars, also some other noxious insects. It has really a sweet song, a sweet note, and is said to imitate the song of a number of birds for the purpose of attracting them and getting close enough to catch them.

There are the sweet and beautiful Cedar birds, or Cedar Waxwings—Waxwings from the bit of red at the tip of the wing

feathers, which looks like a bit of sealing wax. This is only apparent in the mature birds. It does not come in the first year. The Cedar birds are also called Cherry birds, and they are looked upon with great disfavor because they come in cherry time. They are said to eat a great many cherries and so are shot, but their food is largely animal. Out of one hundred and fifty stomachs that were examined only nine had any traces of cherries, and the food is as a whole entirely of noxious insects, caterpillars, grasshoppers, spiders, and the elm leaf beetle; it is particularly valuable in destroying that beetle. Mrs. Mary True speaks of one village where the elm trees had suffered to a great extent from the ravages of the elm leaf beetle, and after a time a flock of Cedar birds came and destroyed the beetles, so that the trees quite recovered; and someone makes the calculation that twenty Cedar birds would destroy nine thousand worms during the season when the cutworm is exposed. They do a great deal of good in destroying noxious insects.

The Scarlet Tanager also is a very valuable bird. It is a summer resident, and is very well known. Perhaps the female is not so well known as the male. It shows clearly the protective coloring given the female. When the male is especially bright, it always follows that the female is sure to be very dull in color. If the females were colored like the males and they were to build a nest and sit upon the eggs, the nest would be quickly discovered by hawks above and man and boy below. The Tanager is useful in destroying a great many weevils, wireworms, and the gipsy moth.

The winter Grosbeak is one that comes occasionally. We are not sure of it every winter, as the winter migrants are much more uncertain than the summer ones. We can always know to a day when the summer birds will come to us, but it seems of great uncertainty when the winter birds will come to us. The Pine Grosbeak is very fond of wild berries. Those that were here two or three years ago were feeding upon the mountain-ash berry, and the seeds of the maple, elm, and ash. They are beautifully colored, and have a sweet rather plaintive note. The summer Grosbeak, the Rose-breasted Grosbeak, is particu-

larly valuable because he is fond of potato beetles. He also eats the gipsy moth, and a great many other noxious insects, and also grasshoppers and crickets. This bird comes from the middle to the last of April and spends the summer. He has a fine song, a song that is perhaps next to that of the Wood Thrush in the beauty of its strains. This is quite abundant about Green Hill and Millstone Hill.

The Sparrow family is a large one, that is, the Sparrow family, I should say, including these Grosbeaks and all birds with strong beaks that can feed upon ground beetles and upon seeds and nuts. They do not seem to be so valuable perhaps in destroying insects, though they feed their young upon insects and so consume a great number in that way, but they are very valuable in destroying the seeds of noxious weeds. The Savanna Sparrow, a bird that is distinguished by a pale yellow line over the eye, is very much like the Song Sparrow otherwise, in its coloring. It comes early, about the last of March, and is a summer resident, though I think it is not so well known as the other Sparrows. The Song Sparrow, of course, is the best known of them all, as it comes very early, sometimes in February, and is here until late in the fall, occasionally perhaps wintering. It builds its nest upon the ground, and the song is one of the sweetest notes of all the springtime and the middle of the summer. It has a very varied song, and it is hardly possible to describe it, to say definitely, as I often hear it said, that he begins with three opening notes, a trill, and three high notes at the end. I have heard it begin with three notes and four, and with simply an upward slur. The song is very much indeed like that of the Vesper Sparrow, and its color is very much like it only it has white lateral tail feathers. The White-throated Sparrow is here only in the spring and in the fall. It is a migrant, going farther north into the White Mountains and Maine to nest. It has a fine song, one of the most beautiful perhaps of the Sparrow family, clear, long, high notes, followed by trills rapidly given and very sweet. Its note gives it the name "Peabody Bird," from the four words that can be said with it, "Old man Peabody, Peabody, Peabody." It is really

very abundant. I found it in very suprising numbers in the city in the fall, scratching about under shrubbery, where it finds its food.

The Junco birds come to us in the fall and stay through into the spring. They are often called the Black Snow bird or Slate-colored Snow bird, but they are not Snow birds properly, that is, they are not the Snow Flakes or Buntings that come to us from Greenland in the winter. These go farther north into the Provinces and Maine to nest, but not so far north as the Snow Bunting. Junco is a very good name because they feed upon seeds and weeds and grass. As they fly they show white lateral tail feathers and are easily distinguished by those. They are usually in flocks and fly up as anyone approaches, showing these tail feathers.

The Fox Sparrow is the largest of the Sparrow family, and comes very early in March, and then again very late in October, November, and sometimes in December. It goes far north to Labrador and west into the Middle States to nest. It has a fine song, fuller and more ringing than that of the Song Sparrow, and is quite differently colored. The Fox Sparrow has the reddish color of the fox as no other Sparrow has.

The Chewink is another Sparrow that is a very common summer resident. It comes about the time the Catbird does, and is very common along stone walls wherever there is thick shrubbery to go under. It is a ground bird, having strong feet, and is often called the "Ground Robin." It has three colors, black, red and white. It has a very pleasant song, and the common note gives it the name of "Towhee," and it is often called the "Towhee Bunting." Its note is heard very often in huckleberry pastures. It is also called "Chewink," a name corresponding to the trill.

The Indigo bird is still another sparrow that last spring I found very common indeed over near Stone Hill. The female is colored very differently from the male in this case. They are ground birds in the sense that they keep very close to the ground, as really so many birds do. Naturally they feed and nest within a few feet of the ground.

The Bobolink of the North visits us in the summer. The female is a brown bird and the male is of the same color in the winter, so that the people of the South call them the Rice birds. As the females are in great excess of the males the southern people think it is perfectly right to eat so many of them. The Bobolink changes his plumage as he comes north in the spring, and is a very different bird in appearance from the Reed bird of the west and the Rice bird of the South that is so troublesome in the colonies. Here where it nests it is really very valuable and does a great deal of good work eating the insects that are found on the ground and in the trees. He is certainly valuable here for his fine song. Thoreau says, "As he flies over the meadow it is all bespattered with melody." He sings finely. A song on the wing is far more wonderful than one in the top of a tree.

The Bobolink begins the Blackbird family, and the Meadow Lark is also a Blackbird, though its color does not suggest that, but the bill and other points have proved it to be a Blackbird. It is a brown bird, a terrestrial bird, having strong feet for walking over the grassy fields. The Meadow Lark is perhaps a good name because he is distinctly a meadow bird, although it is found as much on the hills especially where there are strips of grassy fields as on Newton Hill. It builds its nest in the grass, often making a little arched covered way to approach it. The Meadow Lark is one of the most valuable of the birds in the food it eats. He has been accused of eating clover seed, but ninety-nine per cent. of the food taken in clover time is found to be mainly of grasshoppers. It is estimated that the value of the grass crop, saved by the Meadow larks, on a township of thirty-six square miles, each month during the grasshopper season is about $24.00. It also eats May beetles, ants, bugs, caterpillars, curculios and leaf beetles So we see that far from being injurious in any way, it is one of the most useful allies to agriculture, standing almost without a peer as a destroyer of noxious insects. The bird comes very early in March, and it is quite easy to be seen then although the color does harmonize so well with the background that at first it is quite difficult to find the bird, but when you have once heard one singing it is

easy afterwards. He walks about very leisurely in the grass. The flight is peculiar, a very beautiful hovering flight, a little soaring like the hawk perhaps, and as it flies it shows two very distinct white tail feathers. Then it has a fine song, it is a rather piercing note perhaps and in a manner strained, but it is one of the sweet notes of the springtime.

The two Orioles, the Orchard and the Baltimore, are very valuable. Both have an undisputed reputation as destroyers of insects. They eat about equally perhaps great numbers of caterpillars, the tent caterpillar among others, and bugs, grasshoppers and beetles that feed upon the locust and the apple trees. Then the Baltimore eats the wire-worm and the larvæ of the elaters. They are vegetable feeders and live upon the roots of grass, wheat, corn, potatoes and garden vegetables. Generally their eggs are laid in pastures and on the ground where the surface is undisturbed or in the vicinity of rotten wood. The wire-worms are very hard to kill, so that we should be most grateful to the birds that destroy them. The Oriole is a favorite of poets and people in general. A story is told that Lord Baltimore—the first Lord Baltimore, George Calvert—was so pleased and cheered by the presence of the large number of these birds in the trees of Maryland, that he adopted their colors, the black and yellow of the Oriole.

The Crow Blackbird or the Purple Grackle is very common here. The Purple Grackle has a purple irridescence all over the plumage, while with this variety that we have here, the colored purple irridescence comes off quite early and the rest of the plumage has a brown slatish appearance. These are common birds in pine trees, and we often find them walking about on the ground. In the West they are very troublesome, going there as they do in great flocks of thousands. There they do a great deal of damage to the grain crops, but we have no such trouble from them here and they often follow the plough over the fields and afterward when their stomachs are examined they are found to be crammed with the grubs which they have picked up. Then they eat a great many destructive insects—the rose beetle, May beetle, grasshoppers, caterpillars, crickets, and locusts.

The Blue Jay has a somewhat bad reputation, like the Crow he is accused of pulling corn and eating small birds, but, however, out of 280 stomachs examined the remains of birds' eggs were found in only three and of birds in two. 17 per cent. of the food of the year was found to be corn, but 22 per cent. was found to be of insects, such as grasshoppers and caterpillars; so the verdict would seem to be in his favor rather than against him. He is very fond of the nuts of the oak, beech, and other fruits of the woods, and as this is just at the time when corn is most plenty, so that it would show that if he could get the fruit he likes, he would not touch the corn, and it is very certain that they destroy very few birds or birds' eggs, and the same is true of the crow. A very bulky pamphlet on the crow has just been issued by the Department of Agriculture, showing how much good the crows really do and how well they deserve protection instead of being shot for their depredations.

The Fly Catchers are very numerous and do a great deal of good. They are almost wholly insectivorous. The Phoebe is very common through the summer season. It is often called the Bridge bird from his habit of building his nest under bridges and over streams. The four Fly Catchers that are very common here are the King bird, the Phoebe, the Wood Peewee, and the Least Fly Catcher, a tiny little bird that is very common in our orchards. These have a peculiar flight, always starting from a perch where they keep a sharp lookout, making a sudden circle and coming back to the point from which they started. The Phoebe lives mainly on animal food, and weevils that are so injurious to beans and wheat, flies, May beetles, caterpillars, squash beetles, elm leaf beetles, and grasshoppers. There are so many weevils, between eight and ten thousand species, that every bird that eats weevils should be carefully protected.

The Chimney Swift is very familiar. It is often called the Chimney Swallow, but it is not properly a swallow at all, its nearest relatives being the Humming-bird and the Whip-poor-will and the Night Hawk. They are birds of very strong powers of flight, and swoop through the air, taking all the insects that they find. The Swallows, properly speaking, the White-breasted

that is so common, and the Barn Swallow, are very valuable indeed, not only as fly catchers but as catchers of flying ants and a number of moths.

The Woodpeckers are very valuable in gleaning from the trees the grubs and larvæ of a great many insects. The Flicker is a very common bird of summer. It has a great many different names—it is the Golden-winged Woodpecker, and the Flicker, and it is known by a number of other names. It is perhaps almost as much a ground bird as it is a tree bird, for it is very frequently found feeding on the ground, and 50 per cent. of its food is of ants—three thousand were found in one stomach. The Downy and Hairy are two small Woodpeckers. The Downy is the smallest of all and is very common all the year round in the shady trees of the city streets. The Hairy is marked exactly like the Downy but is a few sizes larger—the Hairy is about the size of the Robin—and not one of these three Woodpeckers shows a questionable trait. They are all very valuable and should be protected and encouraged in every way. The yellow-bellied Woodpecker, that is known as the Sap Sucker, perhaps does a little damage to the trees as it bores so many holes and strips off the bark, but it does a great deal of good in destroying insects, it seems sufficient good to balance the harm it does.

The Black-billed Cuckoo is very valuable indeed as it eats so many caterpillars, grasshoppers and spiders and also potato beetles. This is the bird that is often known as the Rain Crow because it is supposed to give a call or note just before rain. But I think that hardly holds good. He sings at all times of the day and in all kinds of weather. The note is a little peculiar, it sounds more like "Kuk-out" than "Cuckoo". It is a shy bird and is often found feeding upon nests of caterpillars. This bird has none of the traits of the European Cuckoo at all. It builds a shabby nest it is true, but it builds its own nest, and cares for its young.

The Hawks and Owls are looked upon as birds of prey, and are usually considered perhaps as doing much more damage than good, if they do any good at all, but the Owl, and especially the little Screech Owl, is very valuable, and it is very sad indeed to

see its head upon a hat. Nearly three-fourths of its food is of injurious mammals, together with grasshoppers, crickets, and rats, mice, chipmucks, cut-worms, and small reptiles. He also devours night-flying beetles, and no other Owl, except the Burrowing Owl, destroys so many noxious insects. It is one of the most nocturnal of our species, choosing dark cavities in hollow trees during the day. This little Owl does not migrate or even wander far from its habitation during the winter months. It is known to be an expert fisherman, one hole was found to contain sixteen horned pouts that the Owl had caught through a hole in the ice. It was a mile from the hole in the ice to the hole in the tree where it stayed during the winter. They often go about the city and do good work in destroying English Sparrows as well as mice.

The different species of the Hawk should be carefully discriminated. There are three that are injurious, as they attack poultry to a large extent, and perhaps do more damage in eating poultry than in destroying mice and small reptiles—they are the Sharp-shinned, the little Hawk that flies through the trees so swiftly, Cooper's Hawk, and the Goshawk. The Red-shouldered, the Red-tailed, the Broad-winged, and the Rough-legged are very valuable. The Red-shouldered and the Red-tailed are often called Hen Hawks and are shot at mercilessly, but they destroy a great many of the smaller rodents that do so much harm. They kill mice, rabbits, frogs, snakes, half-grown squirrels. The Broad-winged hawk is especially useful as it flies in the dusk and destroys great numbers of the larvæ of the larger moths that smaller birds either cannot take care of or do not care for. The Rough-legged hawk comes to us in the winter and always keeps just south of the snow line, and is valuable in destroying mice.

We have just one bird that seems not to be valuable in any respect, that is the English Sparrow. A pamphlet has just been published in England showing investigations that have been made there. Investigations had been begun there, but were abandoned shortly before it was introduced into this country. It seems very unfortunate that the matter should not have been

more carefully investigated before it was imported. On one estate in England, the sparrows had been destroyed regularly and the gardens and orchards there seemed directly to flourish very much better. The insectivorous birds being protected do their work fully and do it very much better. The English sparrow is very pugnacious and drives off the other birds. It is found not to be insectivorous. The result of stomach examination shows this very fully. He eats grain, and is known to be graminivorous almost wholly, and so, in a way, destructive. But in places where the English Sparrow has been driven away, that is, systematically killed off, as it has been at Green Hill, our native birds do their work finely. I do not know whether there is any other place near here where they are driven away, but they are not allowed at Green Hill, and that is one of the best places in Worcester to find our native birds. Our native birds are so valuable economically and aesthetically that certainly they deserve complete protection, and in order to protect them it seems that a great deal might be done in planting native shrubs. Unfortunately, the New Englander in his zeal to have everything trim cuts down the underbrush and that is just what the birds need. An ideal farm would have all the native shrubs, the berry-bearing shrubs, along stone walls with all the natural undergrowth, and this too along the roadsides. This is so persistently cleaned out that the birds do not have the opportunity to do their best work, because the larvæ of so many insects takes that form either on or in the ground and the birds must work about the ground in order to pick them up. So if we can only have this shrubbery,—the hackberry, that is so productive to birds, the pokeberry, a great many birds enjoy that and it is really a beautiful shrub with wonderful color in its branches, and if it only came from foreign parts would be greatly prized, viburnum, the dogwood, bittersweet, and a great many other of the native shrubs,—and far fewer English Sparrows, I am sure the birds would do a great deal of work that has to be done now by hand in order to get rid of the noxious insects.

3d February, A. D. 1898.

ESSAY

BY

ARTHUR J. MARBLE, WORCESTER, MASS.

Theme:—Pear Culture.

Mr. President, Ladies and Gentlemen:—I was in hopes that something might be said today on the cultivation of pears that would be of benefit to some of our Society, but when I look upon those who are assembled here before me, and see the venerable and gray heads, I feel that there can be more said perhaps in the audience in the way of instruction in pear culture than can be said from the speaker's table. It might be asked why we should stop at the present time to consider this question of pear culture. Those of you who attend our exhibitions have noticed perhaps that in some of the more popular varieties there are exhibited from thirty to forty, and sometimes from forty to fifty plates. The first in the order of merit and rank of the first ten of these plates are usually very fine specimens, and as has been said by one exhibitor, "And when you go beyond that, the majority of the plates are useful to us only as an object lesson of what we ought not to raise, and if any prize at all were to be awarded, it would be what is sometimes called the booby prize." Again, the difference between the fine specimens of fruit which are exhibited here and what you so often see heaped upon the fruit-stands and in the market is very marked. You and I, at least I, frequently when standing in the hall, have heard people say, "Well, why don't we find such fruit as that in the market? Why do we not see it on the fruit-stands?" This goes to show that there is a difference, and a great difference, in fruit culture

and especially in the culture of pears, the particular object of our talk today.

To succeed in pear culture, I think you will agree with me, one should have a natural taste for it. He should think more of the tree than of what grows on it. He should be more interested in trimming and thinning the flower and fruit than he should in eating the fruit after it is matured; and in addition to this, if he comes of an ancestry of similar tastes, so much the better. In my case, my earliest boyhood recollection of my father, who was even then a member, and an interested member, of this Society, was seeing him with his hired man selecting, sorting, and setting out his pear trees; and I can remember even then that the names of Samuel H. Colton, John Milton Earle, D. Waldo Lincoln, Jaques and others, were household words. What they said about this pear, and what they said about that pear and that tree was authority to be launched at anyone who dared to doubt or differ. On this home-place nearly or quite one hundred varieties of pears were grown, which, as a boy, I had full freedom to range, cull, and sample, and educate my taste for future life.

In cultivating pears, I think the first point that we have to consider is that of soil. Now there are those who hold that the only soil to raise pears on is heavy black clay soil. Downing, our authority on fruit, says a rich, mellow loam, but does not qualify that by saying whether his loam is clayey or sandy; but I know when I began my last cultivation of pears, which was in this city, that my soil ranged from sand to gravel, and some of the gravel was pretty coarse, and a pear expert claimed that while I might be able to get some pears that would do to eat in my family, I never would be able to produce them in any number which would be fit to exhibit in competition in the halls of this Society. To those who have soil of that nature, sandy or gravelly loam, I would say they need not be discouraged, and that with intelligent cultivation and plenty of fertilization, that soil can be made to produce and compete with any soil, not only so far as looks and appearance is concerned, but I do believe, Ladies and Gentlemen, that the flavor of all fruits and

vegetables that are grown on a sandy loam is vastly superior to that which is grown on clay soil. And I think this early experience about which I speak was on a black clay soil, which was capable of raising two tons of hay to the acre, and the pear trees grew very thrifty, but the flavor of the fruit was not such as we get on a sandy soil. Therefore, I would suggest, as one point in my opinion in pear culture, that to develop and bring out the finest quality and flavor of the fruit a warm sandy loam, well fertilized, is the proper soil to have. Those who already possess that soil need not be discouraged, but may feel that they have about the right thing. I do not know but that it would be evidence in that regard, that from that soil during the year of 1897, I succeeded in this hall in getting the first premium on the Bartlett and the Bosc, and on the Anjou and the Seckel the second premium, which shows at least that the soil is not to blame if we do not succeed.

Having selected your soil, the next thing to do is to prepare it by thorough and deep cultivation, with plenty of fertilizers. After you have put in what seems to you a great plenty of fertilizer, put in just as much more, for the pear tree is very hearty and a gross feeder. I do not know of anything that will stand as much and as rank fertilizer as the pear tree. I never saw a soil yet that was too rich for the pear tree, if it was properly drained and kept in cultivation.

Having selected and prepared your soil, you want to make up you mind what varieties to set out. Downing, our authority, the official authority of the Society, names nearly three thousand varieties, I think, in his last edition, which was in the latter part of the eighties. There are a great many more varieties which Downing has not mentioned. We may say that out of something over three thousand varieties of Belgian, French, American, English and Russian, there are, roughly speaking, about twenty varieties which are fit to grow, so our President and I think, and we care to grow only ten. It would be well for the novice in pear culture to ascertain what the standard and selected varieties are, because our tree agents who travel around are generally blest with more ability to sell than they are to tell

whether what they have to sell is the right thing for the buyer. Their ambition is to make sales, and I have sometimes had them come and recommend to me trees and varieties which I know are not worthy of our attention. Of course, it may be said that tastes vary, and some pears which our President and other members of our Society and I might not include in our list would in the difference of taste seem very desirable to other people. But when I speak of varieties that are desirable to grow, I am speaking in the popular sense, those that will appeal to the majority of people. I know that I have at least one or two that I am pleased to grow myself as a sort of individual recreation and pleasure, just as another has some varieties that he loves to grow which everybody does not care to grow and which it would not be profitable for everybody to grow.

Having selected your trees, the next question is to set them out properly. Now there is quite a difference in the setting out of a tree; some people cannot set out a tree in April and have it live, while others can set one out in January and make it grow and thrive. Do not dig a small hole as if you were about to set out a fence post. Of course, I am assuming now that your land has been ploughed, and ploughed deeply and thoroughly, and well fertilized. In digging your hole to set up your tree, do not dig a small hole, but dig a hole that is two or three times as large as seems necessary. And I might say here, that my remarks to-day are not so much for the professional fruit raiser as for the amateur who desires to cultivate for his own pleasure and to exhibit. Having dug the hole, take the tree, and setting it in the hole, spread the roots around very carefully. I think it is a good idea to turn what you have taken out of the hole upside down and put that which was at the bottom on top, which with proper care and fertilization will become as good as that which was formerly on top. There is one other point which I would mention, and that is that the trees may come to you properly headed in and trimmed; but if they are not, you want to be sure to cut off from the head of the tree as much as, or a little more than, was lost in the roots. Always the roots will lose more or less, and it is necessary that a balance should

be maintained with a little in favor of the roots after it has been transplanted.

Speaking of setting out a tree in January, eight years ago last month at the south end of Main Street at the corner of Beaver, they were excavating the cellar for what is now known as the Beaver Block. It was about the first week in January, at least not later than the tenth, and was what you would call an open winter. On the land stood a very thrifty pear tree which was about ten or twelve feet high. It was a nice looking tree; and I said to the man who had charge of the excavation that when he got to the tree I desired him to take it out with what care he could, striking off as little of the roots as possible, and leave it at my place. He did so, and finding it there I took care of it that night and the next morning proceeded to prepare a place for it. I took off two-thirds of that tree and I set it with considerable care, and after that I gave it a vigorous pruning. I never saw a tree which was set out in the spring or fall that did better than that tree set out in January, and the tree was a Rostiezer. I believe that I have had the pleasure of getting the first premium for the Rostiezer from a tree set out in the month of January. I do not know whether this has been accomplished very often or not, but I would not like to set out a pear tree in January this year.

One method of getting extra fine fruit I have found very successful and that is what we call double-working a tree, so much so that I have got where I do not care to raise pears in any other way. I presume most of you understand what double-working is, but there may be some here who do not know what the term means, and for their benefit I will explain. The singled-worked tree is where the standard stock is budded and those are quite small, and when they get to be about seven, eight, nine or ten years old, according to the variety, they get into bearing condition. Now, to double-work a tree is to take a tree when it has attained a size sufficient, and that is generally the time when it will come into bearing, and cut off those limbs and graft on the scions of the variety that is desired, and my experience has been, both in the clay soil of my boyhood and

on the sandy soil which I have used in my maturer years, that in no other way can we get such fine pears, quality and quantity both considered, as we do in double-working.

In the early fifties, when Mr. Hadwen was a young man and I was a boy, there was a pear which I think you will agree with me in saying was one of the finest pears we have ever had, and that was the Flemish Beauty. A disease called the pear crack attacked it and it became for a long time and perhaps forever, with here and there an exceptional case, valueless; that is to say, the pear cracked up to that extent that they were good for nothing but to feed to the stock, but we do not raise pears for that purpose but rather for dessert. Now we have found that the Flemish Beauty is one of our most valuable trees for double-working. It is a fact that it will produce, so far as my observation and experience go, better pears than budded trees or single-worked trees. Particularly is this true in the case of the Bosc which is, perhaps, next to the Bartlett, our most popular pear. Now the Bosc, budded or single-worked, is a tree of very slow growth. It takes a long time to grow the Bosc on the standard stock and when you get the tree the results are such that many people get discouraged and give up trying to grow it. But take the Flemish Beauty of a size that can be properly handled, and another good stock is the old Vicar and another is the Bousock,—pears that we used to grow forty years ago, but which are very little grown now,—and they make excellent stock for double-working, especially for the Bosc. Some of the finest specimens I have ever seen came from the Vicar and the Flemish Beauty.

On the same soil, within five rods of each other, I set out a very handsome Bartlett tree, a tree that was sold to me by a nurseryman as one that would come into immediate bearing, and a Flemish Beauty that was grafted with the Bartlett. Those two trees I have had about ten years, and I have come to this conclusion, that the Bartlett which was single-worked was no good as a Bartlett. On the contrary, the Flemish Beauty which was grafted with the Bartlett produced very handsome Bartlett pears with a very fine flavor. I think you will agree with me

in deciding in favor of the Bartlett that was grafted on to the Flemish Beauty. I have grafted the Bartlett over and am trying to make a Comice of it, and I never saw any Comice that was single-worked or budded that compared with the growth of the Comice which I am getting on this Bartlett tree. Perhaps I am very near solving the question of how to raise good Comice. I think it is a matter of considerable interest, for the Comice is one of the finest pears that we have, and if we can only get them by double-working them on the Bartlett, it is going to be a thing of great value. It is denied by many that the stock into which the graft, the scion, is set, has an influence on the graft and on the fruit we get from the scion. It may be that those who take this position are right. But this is my experience. About four rods apart in one direction, and two rods in another direction, I have three trees, and all three are grafted with the Bosc. Two of these trees are the Flemish Beauty and the third one is a Bousock. On the Flemish Beauty trees the russet of the Bosc gives the pear a golden and pink tinge, and in some cases it is almost as pink as the pink of the Flemish Beauty; while the Bosc on the Bousock is green, a very dark green, and does not average as large as those on the Beauty. It is a little singular that we should have such a coincidence. I would say that otherwise the trees have stood a fair showing. They were vigorous and thrifty and had the same care and cultivation, and all stood in a sunny situation. Of course, if one of those trees had been on the north side of the barn, in the shade, that might explain the light and dark color, but the conditions were equal except the difference in the stock.

In pear culture, I believe that we ought to look for quality rather than quantity. Now, I have plenty of neighbors who go out and put up all kinds of poles, sticks, ropes, and chains, to hold up their pear trees when they are laden down with pears, but I have one invariable rule, — never to allow a limb of a pear tree to carry any more pears than it can hold of its own strength. Instead of propping or tying, pick them off. People say, "We cannot do it; we cannot waste those pears." Why, they are worse than wasted when they are allowed to stay on the tree.

When I have two bushels of pears on a tree, I pick off one bushel, and those that are left are worth twice as much. There are two ways of thinning a tree. If you love your tree, and if you think more of the tree than of the fruit that grows on it, go out and look up into the trees in the springtime, and if you find that the buds are too thick, pick off one here and there — that helps more than the thinning of the fruit. On more than one occasion I have seen a man bring in a dozen good pears as specimens, but they were not a dozen selected out of a bushel; he had plenty more just like them. All good ones will bring a double price, so there is no money lost.

Now there are other questions which, of course, any beginner or amateur, in raising pears, will run up against. I will say, in reference to the question of what is called the pear blight, that I do not think I ought to go into that extensively to-day. It is, I believe, attributed to two causes,—one is that the sap becomes unhealthy, and the other the ravages of a small insect. We have found, however, that some varieties are more subject to it than others. These are very rapid growing varieties, and always grow very late in the fall. Two which have come under my particular observation, and which would be very fine pears, and generally liked, if it were not for the pear blight, are the Clapp's Favorite and the Lucrative.

Then comes the question of picking the pears and ripening them. We will try to condense what we have to say on this point. There is one pear that is better ripened on the tree than off, and that is the Seckel. Every other one that I have had experience with, is better taken off of the tree and put in a cool, dark place, preferably in the house; or if you have the right kind of a cellar, a cool, dry one, in the cellar. The quality is very much beyond that of a pear which is allowed to ripen on the tree. The September and the early October pears, with the exception of the Seckel, if left on the tree would rot at the core and would not be fit to eat. So you want to take this as a principle — that you must ripen your pears off of the tree.

Then might come the question as to what our best varieties are. Well, this Society has the best five and the best ten, in

its opinion, but other people have their ideas, and it is as I said before, entirely a question of taste. I will take you into my confidence to this extent — the ten which I am cultivating are the Rostiezer, Clapp's Favorite, Bartlett, Seckel, Sheldon, Anjou, Comice, Lawrence, Bosc, and Dana's Hovey. Somebody, perhaps, may drop one of those and put in Frederick Clapp, and some one else may drop another and put in something else, and so on. But I will say that I grow the Rostiezer and the Clapp's Favorite only because they are the two best pears on an average that get ripe before the Bartlett. The Bartlett, Bosc, Sheldon, Anjou and Lawrence, because of their quality, and the Comice I grow because it is a hard pear to grow and of the best quality when you get it; indeed, its quality is unsurpassed by that of any other pear. That is my taste; another man may not think so, but all will agree that it is of the very first quality, even if they do not care to grow it.

Another thing that I would say before I drop the subject of pear culture is that there are very few of these varieties which I have mentioned that are of recent production or origin. The Dana's Hovey and the Frederick Clapp are the only pears which I have mentioned here that we did not raise fifty or sixty years ago; so there are only two varieties that we have got in the last thirty or forty years. Occasionally a new variety flashes upon our attention and we hear a great deal about it at the time, as for instance, the Idaho, which was heralded all over the country as the "coming pear." It was a great pear; it was coming to fill a place and a want that had never been occupied before; it was going to stand at the head of the list. Now we have tried it in New England, and whatever it may be in the South or in the West, I can say that here I have never seen any specimens of it that were over third-class; I have never seen any I would call second-class; therefore the beginner in pear culture had better try some of the standard varieties that have been grown for thirty or forty years, rather than to take some of the new varieties which are heralded with so much noise by tree agents.

10th February, A. D. 1898.

ESSAY

BY

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Theme:—Horticultural Interests in Relation to Public Education.

Mr. President and Members of the Society:—Personally, I should very much prefer to hear a discussion from the members of the Society on the relations between horticultural interests and education, than to try to tell you anything about them myself, and I hope that we may have a discussion of the subject which may be of great value to myself and to the city at large. I am, however, encouraged to take up this subject by the fact that in reading over the reports of the Society, as I always have from year to year, it has seemed to me that I am not bringing forward anything that flavors of innovation. The Society has certainly fought a good fight for over fifty years, and in all that time the sole purpose and aim has seemed to be purely and simply educational. It has existed strictly as an educational institution, a veritable college of horticulture, in the very best sense of the word.

I hope the country is now waking up to the fact that there are different kinds of education, good, indifferent and bad; and very different qualities of knowledge in consequence of different methods by which we educate. For this we have the luminous discriminations in Holy Writ between the "knowledge that puffeth up" and "the excellency of knowledge that giveth life," "knowledge that is to be desired rather than choice gold" and knowledge of which Isaiah says, "Thy wisdom and thy knowl-

edge, it hath perverted thee." Yankee sagacity has always looked with distrust on "book learning," still it has come to be the vastly predominating kind of learning in our public schools. And why should this be? The idea that the child knows something when he has learned to say it from a book is the great stumbling block now in our public education, and the only hope for our present situation, the only remedy for this parrot-like educational farce, seems to lie in the direction of improving the quality of knowledge taught in the school.

As a matter of education, do we ponder enough and learn as much as we might from the way a little child begins to study the world in which he finds himself? A baby sleeps most of the time the first year and still at the end of three years it has been estimated that he has made more actual progress and learned more things than in thirty years following. At the end of this early period, the brain has grown to be about five-sixths the size of the adult, and the development of this important organ is completed, so far as weight is concerned, by about the sixth or seventh year for girls and the eighth or ninth for boys. In this very early period, before formal schooling is begun, the child learns by what we call the natural method. He learns things, realities about him, by direct contact; he feels, smells, tastes, sees, hears the objects about him, soaking in unconsciously, as it were, an infinite amount of information. At the end of this period, our school system changes rather abruptly, a child's method of learning from the real and natural to the symbolic. In place of studying things, he must study numbers, arbitrary figures which represent things, and words which tell about things.

We may represent the natural method of education and the symbolical by this simple example: Suppose we had set before us the task of learning a furnished house outside and in. We might sit down to a book as thick as a dictionary and study through it page after page, learning it faithfully by heart, all about the arrangement of doors, windows, outside grounds, everything of that sort; and even after we have done all this, what would such knowledge amount to? Suppose instead we

visit the house and look it over, take in the outside appearance, pass in review the things in the different rooms. We have learned the house at a glance, almost unconsciously, almost without effort. It would have taken us days, possibly weeks, to learn so much about it by the symbolical method. Further than this our book knowledge, as we have it in mind before coming to the house, may prove an absolute incumbrance, from the fact that there would be a constant tendency to refer things to the book. For instance, we would be repeating, "The book says, 'Five feet from the front door there is a window, four feet from the ground, with twelve panes of glass.' Oh yes! that is the window," when at a glance we have seen it and taken it all in. Most of this is a waste of time. This illustration is not so different from the case of a child who is under the necessity of learning something of the world about him, and my only reason for presenting it to you is to raise the query, whether elementary education might not be made more substantial by continuing as long as possible in the natural method of learning. But we must bear in mind that we cannot go far without the use of symbols. When things become too numerous and cumbersome for easy manipulation, then the mind will naturally come to substitute the word and symbol, and these by reason of long past experience will have about them the quality of reality.

An important feature of the natural education of the child is that it is so largely active rather than passive. He learns by acting, doing, and trying to do all manner of things. In universities and higher schools, we are returning to this method of childhood in the laboratory courses, and in the manual training and cooking; and at the other end of our educational scale, we are trying to realize its ideal in the occupations of the kindergarten. The great movement at present is towards drawing out the best activities of the child, and we need this throughout the grades from the kindergarten to the college. As Dr. Burnham has expressed it, "The great maxim of modern reform in education is the activity of the pupil instead of the didactics of the teacher." You see from this what I mean when I say that the Worcester County Horticultural Society has been an educational

institution, a true college of horticulture of the best type. From the first foundation in the early forties to the 1897 report of Secretary LINCOLN, saturating every report, permeating every exhibit, is that clear educational purpose to "*advance the science and to encourage and improve the practice of horticulture.*" Thus knowledge and action have gone from the first hand in hand as they always should. Socrates and Plato taught as a foundation for all educational systems that knowledge is the first step toward virtue, and the doing of knowledge is its perfection. And if we could have this kind of education, the kind of education that the Worcester County Horticultural Society has been standing for all these years with relation to the subject which it teaches, permeating the population of our city, we might have less of this flimsy style of education that serves to unfit so many for real efficiency and the best enjoyment of life.

To what extent the Society has had in mind active co-operation with the public schools, I am unable to say; many of you could speak more to the point on that subject. I could, however, quote many instances where such relations are hinted at. "Your Secretary," says the Transactions of 1897, "would put his faith in the Common rather than the High School, where both cannot be had. He would educate the mass, at public expense, instead of a class. He would '*Advance the Science and improve the Practice of Horticulture' so that each family, in possession of its own homestead, should learn how best to cultivate its area, however contracted.*"

In an earlier report he also reminds the Society: "Our older members are rapidly passing away; is there promise that their places will be filled? Certainly there can be no hope of it from a county which, save in title, has ceased to maintain any distinctive connection with the Society. But looking straight ahead, what reasonable prospect is there of keeping up—let alone advancing—the position and repute of the Society in Floriculture?" We also read in our own Transactions: "The highest mission of the Horticultural Society is to lend its strongest influence to the educating of children to a love of flowers which will lead them to be willing to give time and labor for their cultivation."

I feel at some disadvantage in speaking upon these points, since we all realize that theory and practice should go hand in hand, and facing so many of you and being obliged to confess that throughout the history of the Society, although I have attended the exhibits, I have not produced a single thing to exhibit. I plead guilty on that score, and would say that the position of a teacher working for a salary is not that of a citizen in a home of his own. It has been my bad luck to move from place to place a good deal, and it has not been my good fortune, as is the case with most of our good Methodist preachers to drop into a parsonage which has already received some attention horticulturally. It has been my lot, rather, to find a place where the wilderness has not been very much disturbed, and I can really say, to clear myself on this point, that in the last ten years it has been something like five different places that I have inhabited, and whereas they were generally found in a state of gravel banks or patches of brush and sod, I have left vines and trees in all but one of them. You see, however, the disadvantage that a man taking a place of that sort has in competing with any of the older gardeners who have their soil in cultivation and everything in fine bearing shape. But as possibly some of you know, I have not kept my hands absolutely clean from mother earth, and there is nothing I enjoy really better than going out and digging in the garden, so that I can say from the bottom of my heart that what we want as a Horticultural Society is to promote the knowledge of horticulture in the city, and cultivate the will and the purpose, the ability and the practice, of successful horticulture.

We are now ready to take stock for a moment of our city's horticultural interests, and note how these may be increased, and promoted possibly, by the co-operation of the Society with the public schools.

It is probably the greatest horticultural interest, the solidest and most valuable, that each house lot be provided with the best flowers and the best fruits for the health, comfort and happiness of the family and the community. Many parts of Worcester are extremely fortunate in the education which this Society has

largely disseminated, and we have a fine array of floral decorations in the gardens and very generally a goodly supply of fruit. That applies to certain parts of the city. The most serious drawback, the most insurmountable obstacle to the full development of this great interest, as has been pointed out many times by your late Secretary, is juvenile vandalism. "This evil," he says, "is rapidly developing as our city grows in population, with a portion of which it would seem to be an accepted theory that there can be no private property in flowers or fruits. Their cultivation will have to be abandoned, however reluctantly, until juvenile trespass and theft can be effectually arrested."

This is a matter the seriousness of which I referred to on a former occasion, and it cannot be overstated for a city like this. I have never lived in a city where the people are so pestered by the juvenile population as here in Worcester. What are we to do about it? What position is the Society taking in regard to this matter, and what steps is it taking to remedy the evil? Do we realize fully that the best way to meet this difficulty must be to encourage the children in the cultivation of flowers and fruits of their own? A child who has planted and reared something of his own can appreciate, as he or she can hardly be made to appreciate in any other way, the rights of ownership. We may in this way, by encouraging the child's cultivation of things, lay a solid foundation for conduct which no amount of law, preaching and punishment can ever do.

A second solid interest consists in our roadside and park trees. It is a matter of profound regret that Mr. Draper in his excellent discussion of trees for roadside decoration is obliged to rule out the chestnut and the walnut on account of the clubbing and abuse of the boys. It is a pitiful commentary on parental control if that is the way we must settle the question of our roadside trees,—in the negative against such trees as the chestnut. Now the evil of just this thing is so widespread that we may dwell on it for a moment. I have talked with a number of farmers and the voice is universal, the vote unanimous, that we are obliged to cut our chestnut trees, our nut trees generally, to clear them out from wherever they may offer temptation to trespassers.

Can that be the final settlement of a question like this? I really hope not. For myself, I would be willing to pledge a hundred dollars to any farmer who is annoyed in any way from the trespassing of a boy of mine, and if all the parents in the city would do the same, what might we have in just this respect? We might have our roadsides and our pastures so full of chestnuts and walnuts that we could gather them to burn. What is the state of the case now? I saw a man walking under a large chestnut tree at the corner of Woodland and Charlotte streets, kicking the leaves up as he went along, and just as he passed me, I heard him growl, "Four boys to one chestnut, no use," and so it goes. The world might be very much better if we took hold of the sources of these evils which lie in the proper education of the young.

Following now the horticultural interests further, we find that they divide into two branches; each covered by an organization in the city of Worcester. There is a great horticultural interest which connects itself with our birds. They are the protectors, the stewards, the saviours, of our orchards and gardens, therefore it would be perfectly legitimate for a Horticultural Society like this to encourage in every way possible the protection of birds, and the education of children with reference to the value of the different species to the community. It has been said by an eminent French naturalist that if birds were destroyed entirely the world would become uninhabitable within nine years' time through the ravages of insects; and this in spite of all the spray pumps and insecticides we could get. We make little enough of this horticultural interest in our education, still this lies in the line of work to be done by the Natural History Society. And so with another great horticultural interest, the methods of dealing with the insects themselves. We have them, for observation and for study by the child population of the city, all the time with us, and it would cost nothing whatever for laboratories or apparatus in the schools to make the study of insects such that every child in the city, by the time it had completed the ninth grade work, would know possibly a hundred of the insects which have most influence on our horticultural prosperity.

He could know the coddling moth and the best thing to do with respect to it, the tent caterpillars, the canker worms, cut worms, aphids, rose beetles, our flies and mosquitos and a host of others. He could learn about them without going outside of the city limits, by simply seeing what is going on in his own back yard. This work belongs equally to the Natural History Society, and I am happy to see that it is being taken up by that organization. In planning work of this sort, we must remember that the school courses are already being overcrowded. This is a point we must take into careful consideration. It is, however, a good thing; for we are under the obligation, whenever we attempt to add anything to school work, to make it a thing so good that the people will be glad to let something be dropped which is not so good in the school course that this may be taken up. In this way, only the best possible lines of work for the children can be introduced into the schools.

As I say, the Natural History Society has taken up this matter, especially for the study of insects and birds, and it is to be hoped that a great deal can be done in this line. Boxes and cases have been provided by the Natural History Society. These will be left in the different schools where teachers desire to take this up as a part of their nature work. The children are to be encouraged, and they are anxious to do this kind of work, to collect insects, bring them in, and they may be allowed to spend some of the time after their other lessons are learned in preparation of these cases, in the mounting of the insects and the study of live insects in cages, feeding upon the leaves of our different plants, all of which can be easily provided in the school-rooms.

Many of our moths and butterflies readily lay their eggs in confinement. These with the eggs which the children can bring in from outside may be allowed to hatch. The children may then rear the larvæ, feeding them with the leaves of their various food plants. When full grown, they may be seen to spin their cocoons and undergo their transformation into pupæ and finally to emerge as the adult moth or butterfly. The class may

thus have in living form under their own eyes the whole life stories of many of our more interesting and important insects. In the higher grades, and wherever practicable, they may study and estimate the damage which a single pair of insects can do in a season and get clear practical ideas of methods of destroying them. During the study, series of specimens, the egg and egg cluster, caterpillars or larvæ of different sizes and ages, cocoons, and chrysalids, and the male and female adult, may be permanently mounted. The next year the class may work out some other species in the same way. I should begin with the insects that do the most harm or the most good and work from those down to others of less importance, and we should find enough to keep the child population busy, with something new and interesting each year, for at least one hundred years to come.

The Natural History Society offers to furnish convenient cases in which the specimens may be preserved, to store and care for the collections and to issue them to the schools as they are needed. A great many valuable specimens are collected every year, but the teachers and pupils go away in June and do not come back until September, and when they do come back, it is only to find a little pile of dust underneath where the specimens had been to show how well the museum pests had enjoyed their feast. But if we can have them saved from year to year by the Natural History Society, we shall have in a few years collections, and plenty of them, of the insects which we want to know most about right here in the city, collections which every child can have in his hand some time during the year and study by the natural method. This will result in the dissemination of knowledge throughout the city which will be of untold value not only educationally but horticulturally as well.

Of course you know better than I do the ravages which these insects create. Take the coddling moth for example. I have had a lot of apples counted this winter with the result that something over ninety per cent., as they go in the ordinary run of market apples, were wormy. Other pests in the way of the railroad worm, the canker worm, the white marked tussock moth,

the tent caterpillars, and many others are better known to the members of this society than to myself.

Then the birds and insects, we may leave with the Natural History Society, and I suppose too we should leave to that organization some other very important matters connected with our horticultural interests. Take for example the bats. Those are Natural History specimens of course, but what the bats do in a country is undoubtedly a horticultural interest. We have the birds to take care of the insects—the swallows and the fly-catchers in the air, the perchers and warblers in the trees, and a number of birds on the ground—but all of these are day feeding. A great many of the insects have dodged the birds by taking recourse to the night, so that many of our most noxious and destructive insects are nocturnal, like the coddling moth itself. Bats are the only animals which can serve us for night-flying insects. They fly from dusk to early morning, collecting insects much of the time. We have no idea how much good one of these little creatures does in a community. Night after night I see them about the orchard, and the value of one of these little animals, I think, might easily amount to fifty dollars a year. And still our education on just this point fails, when it is possible for boys, as I found only a year ago, to go into a barn where bats are colonized and poke them out and knock them down with hay rakes, "for the fun of it." On such points as this our horticultural and our educational interests should be made to focus. We should teach the children in what way they are contravening important interests of the community by action of this sort. It is really a lack in education, and there is no blame to be attached to the children, and I do not think there is any blame to be attached to them for stoning and clubbing the chestnut trees. It is all, it seems to me, a matter of quality of education; and our problem is to give them a quality of education which shall make such vandalism impossible.

Again, too, as to our common toad; its work in the city constitutes a great horticultural interest, very little appreciated, but which every child should know. The damage and annoyance caused by insects is something enormous. At a recent meeting

one of our members stated that the destruction of robins in the South during a recent winter led to greater loss in Massachusetts on account of the increased ravages of cutworms than that caused by the frosts in Florida. It is true our robins are fairly efficient destroyers of cutworms, still they only feed by day, while cutworms work at night, and robins can get at them only in the late evening and early morning. The toad feeds all night and only on the ground, where the cutworm is at work. Furthermore, as we learn from Mr. Kirkland's recent work (and this is something well worth the entire cost of our Agricultural Experiment Station for the year, if the people are wise enough to utilize his results) cutworms form a considerable part of the toad's food. From examinations of a large number of toads' stomachs Kirkland estimates that a single toad may destroy over 2,000 cutworms during the months of May, June and July, and that from this item alone a single one of these harmless creatures may well do a gardener service to the amount of $19.88 each season. A number of our experiment stations are at work upon some method of ridding gardens of cutworms, and they have tried various poisons and devised various ways of applying them; but what we really need is sufficient public education to protect and properly utilize our valuable little friend, the toad.

In order to illustrate what I mean by education in such lines allow me to instance the following example. Since coming to Worcester, my feelings have been greatly outraged every spring by the way the boys clubbed and stoned the toads in the little pond in University Park. Toward the latter part of April or the first few days of May the toads of a neighborhood gather in the nearest stagnant water to deposit their eggs. Since most of the natural pools in a city are either filled in or drained, they crowd into the remaining ponds literally by the thousands. If the weather is warm the eggs are laid within a day or two of entering the water and the toads return, probably to the same yards and gardens from which they came. In the particular pond in question they gather in shoals in which a single blow of a stick might kill half a dozen and a stone could hardly fail to mutilate

one or two. Different individuals coming from varying distances naturally reach the water at different times, so that the breeding season generally extends over two or three weeks. Almost any hour of the day, during this time, the children could be seen running round and round the pond clubbing and stoning the toads. Great numbers were not killed outright and could be seen struggling about in the water with legs broken and dangling and entrails exposed or eyes crushed out. In walking once around the pond, I counted 200 dead or mutilated toads, and a little boy told me that the day before he and another boy had killed 300 by count and carried them off in an old milk can. I do not suppose that this 500 represents more than one tenth of the whole number wantonly destroyed by the boys each year in this single pond. Furthermore, for each female toad killed at this season we lose the 8,000 to 12,000 eggs that she would have laid. A system of parental and public education which makes possible any such wanton cruelty and destruction of valuable life is certainly faulty in the extreme. And a community in which it exists ought to be pestered to the limits of endurance by mosquitoes, flies and gnats, and have the greater share of its flowers, fruits and vegetables destroyed by insects. It is too light a punishment to fit the crime against nature.

Such being the condition of affairs, what can rational education do to better it? A great many croakers answer: "Nothing. The passion to kill is so strong in children that all education is powerless to stop them." The following, however, are the facts:

On the 31st of March I gave a brief statement to the Worcester papers pointing out a few of the interesting facts in the life history of the toad and asking the school children to learn the value and use of the animal to the community. The toads came to the pond to lay April 25 and, the weather turning cold, numbers could be found in the water up to May 14. During this time I visited the pond daily, especially at times when the children passed to and from school. The children gathered in groups and watched the toads with great interest and gathered hands full of eggs to take to school, but I did not see a child offer to harm a toad. More than this, I found no evidence that

any had been wantonly killed. People living in the neighborhood and the man who takes care of the park remarked to me that the children were not killing toads as in former years. A boy was overheard to say: "The kids are not killing the frogs as they did last year." I asked him why it was. "Oh," he said, "they read something in the papers, I guess."

I should have been satisfied, if such a result had been attained in five or ten years; but, here we had it within a month. Certainly nothing in recent years has given me more encouragement and demonstrated more clearly the possibilities of rational education than just this little circumstance. If we can keep it up and have this kind of education in all lines of nature study we can soon have a most remarkably comfortable city to live in, and it would be worth in actual fruit, flowers and vegetables saved to the community a large part of what our public schools are costing.

I mention these things in the hope that by appreciating the wide range of our horticultural interests, by realizing their intimate relations to the education of the young, we may as a Society widen our sphere of influence to even more actively encourage and support this living kind of knowledge, for which we have done so much in the past.

Turning to still another line of work, if possible, even more specifically horticultural we may ask, How can we interest and encourage children in the cultivation of fruits and flowers? We are often told that it is difficult to interest children in raising flowers, and this is true. It is probably safe to say that horticulture is a love which generally develops later in life. Still there are many exceptions to this rule. We not infrequently find children of even four, five and upwards with a veritable passion for planting things, and I am inclined to think by beginning young enough and by adopting suitable methods, we might not only interest the children but establish in them a life-long love for the culture of flowers and thus greatly increase the number of amateur horticulturists in the city.

For suggestions as to ways and methods to this end we may cite again the policy by which this Society has kept its exhibits

flourishing and its own members active and interested for more than fifty years. I refer to the matter of offering prizes for the best specimens grown. This has introduced helpful competition, thus making the progress of the Society an interesting game, already more than fifty years long. Bringing in a little fun, a spice of rivalry, used to make spelling, and dull old-fashioned parsing, interesting. To stand at the head or foot of the class sufficed to make the old spelling class the most interesting and enjoyable exercise of the whole day, simply because we made a game of it, and this is one the elements of the natural education which I hope is coming. By all manner of moralizing or preaching we might fail to get a child to put his whole soul into the raising of a plant; and very possibly we could not succeed in hiring him to do it. But make a game of it, and the children take to it like ducks to water. The experiment was tried in one of our schools last year, and, although from lack of experience the plan followed was not as good as it might have been, I was agreeably surprised at the results. The experiment consisted in giving to each child who wished to try, in all the rooms in the building, a certain number of flower seeds from the same packet, offering small prizes for the best plants brought in at the end of the spring term. I have found it somewhat difficult to get the public to grasp the purpose of this work. The idea is not so much to raise a beautiful plant. We can hardly expect this, especially at first, from children who have never planted a seed in their lives. All we can expect is that each child shall rear the best plant that he can. It is a matter of no great consequence whether the plant be June grass or some rare flower. The putting of his whole soul into making it grow as well as he can, better than someone else, in order to give it the character of a game, this is the real purpose of the work.

Think for a moment what a large lesson we have given our child. In order to master it properly, how much he must learn about soils, plant food in the soil, the influence of warmth, moisture and sunlight, the prevention of plant diseases and the destruction of injurious insects. It is in fact the lesson of the

whole human race in learning the influence of all cultural conditions upon plant growth; the problem of making two blades of grass grow where only one grew before. In giving this lesson we thus place the child in the great tide of human effort which has done more than anything else to advance civilization. There is no bottom and no limit to the amount a child or a man, a horticultural society, or a human race, can learn in such a lesson as this. And, we may add, from throwing about his little plant the best possible conditions of life and growth, it is only a short step, it is in essence the same thing, to placing around any human life that may be entrusted to his care the most favorable conditions for growth, not only physical, but mental and moral as well.

As a matter of fact, with the kind assistance of your Secretary, a list of about ten plants were selected which would grow rapidly and bloom by the middle of June, thus giving the children an added satisfaction. Each room was given seeds of the same plant, something very easy, dwarf nasturtium, for the first grade; and we attempted to distribute them so that the ascending grades would each have a slightly more difficult task. Still the highest grade had dwarf petunia. This is certainly easy to rear, but not one child in the room succeeded in raising a plant from his seeds. As intimated above, the plan of conducting the experiment was faulty, as to choice of varieties in the first place, but especially in the fact that the children were not told what kind of seeds had been given them. The idea being to let them, as it were, read a continued story and be eager to see the outcome. But neither parents nor children knew what to look for as the plants came up, and not recognizing them, in many instances, pulled up the flowers and saved the more showy weeds instead. And weeds formed a large part of most of the exhibits. In fact, nothing but weeds were exhibited in the highest grade, and, I fear, the worthy members of this Society who were kind enough to act as judges, Mr. Hadwen and the Hon. Henry L. Parker, considered the experiment a failure. To my own mind, nothing could more fully demonstrate the value and the absolute necessity of such work. Think of it!

Children growing up in a civilized community, who have never planted a seed, who do not know the difference, who cannot tell a flower plant from a weed! Recent investigations have revealed the fact that most of our tramps are not foreign born, as we are wont to suppose, but are native Americans, the legitimate product of our boasted public school system. During the past year I have been studying tramps a little for my own enlightenment. The great majority of them have been through our grade schools. Some have even attended the high schools. Nine out of ten, about, when asked whether they have ever planted a seed and reared a plant will answer: "No." Put to work in the garden, very few can tell weeds from garden plants. Most of them don't even know beans, until they are baked. As far as knowing how to do a little something practical for old Mother Earth, they are paralytic incapables. With our artificial city life are we not allowing ourselves to drift unnecessarily far away from man's safe anchorage and universal source of supply, the soil? This Society has surely been the sheet-anchor of Worcester in this respect; but can it not greatly increase its efficiency and influence by gaining a hold on the children, before they have drifted too far?

In the experiment of flower raising, just described, some of the older children hung off last year. This year it is being tried again in the same school and every child has taken the seeds. And their interest and eagerness in the work is almost pathetic. In the room which had bachelor's button seeds the children were given five seeds apiece, but the last little boy had only four; and for two or three days, until a larger supply of seeds could be obtained, he daily came to his teacher, almost with tears in his eyes, to ask: "When is my other seed coming?" So far, the experiment has demonstrated how generally and how easily children may be interested in raising plants, if approached in the right way. And it seems on the face of it so valuable, the children get so much real and delightful knowledge out of it, that I am in hopes that the plan may be adopted as a feature of elementary botany work throughout the schools of the city. I should certainly prefer that a boy of mine learn how to raise one

plant well than to learn the names of a hundred. The part that I hoped the Horticultural Society might take in the work is simply to offer a few of its prizes, say in connection with two exhibitions, one in June and the other in October, for the best plants raised by children in our public schools. Then the prize winners in the different schools might compete with one another in these exhibitions. This would increase the interest, unify the work of the whole city, and give the Horticultural Society the position which it ought to hold, a position foremost of all our civic organizations in "advancing the science and in encouraging and improving the practice of horticulture" among the whole people of our city. As a policy to enable the Society to reach the whole city, to encourage horticulture generally, and to draw the best young men and young women to its membership and its life-long support, I can conceive of none more strategic than this. "Our older members are rapidly passing away; is there promise that their places will be filled?" Would not the adoption of such a policy enable us to answer the oft repeated question of our lamented Secretary more hopefully? I am aware that your committee has decided not to undertake the work this year. On the whole, I think the decision has been wise; for the plan has hardly been sufficiently developed as yet in the schools. I am, however, glad of an opportunity to present the matter in this general way to the Society, and I hope, when the time is ripe, that the children will not reach up in vain to the Horticultural Society for a helping hand.

Time does not permit me to even indicate the wide range of subjects that may be taken up and the great importance of the horticultural interests involved.

In planning the school course there are plants enough, as many as you please, and as easy and as hard to raise as need be. We may begin with nasturtiums and bachelor's buttons in the lower grades and give them a try at carnations, begonias and roses in the higher grades. In the high school we may go on to subjects like hybridization and the origination of new varieties. The plan is looked upon very favorably by our professional horticulturists in Amherst, from whom we may hope for the newest

and best information and much substantial aid in the near future. Professor Maynard sees no objection to asking the children to undertake the cultivation of fruits as well as flowers. Encourage a child, for example, to plant a bed of strawberries. If it was no more than a yard square, or even a single plant, he might learn their manner of growth and propagation; and, with some of our best varieties, would certainly surprise his teachers and parents, as well as himself, with the size and quantity he could grow. Arrangements have already been made to begin this in some of the schools the coming spring. Then there is the whole list of small fruits,—raspberries, blackberries, currants, gooseberries, —as well as grapes, peaches, cherries and even apples, each one of which any child might have something to do with actually propagating and growing during his school course.

But the subject is even wider. In the study of each plant the children will find it necessary to learn something about the insect pests that feed upon it and the numerous fungous diseases that attack it. At this point, we come to the chief reason why the Horticultural Society should take hold of the work, and why it could not do better than to operate through the public schools. The reason is that many of these insect pests and fungous diseases cannot be successfully dealt with by single individuals. They are no respectors of city lot fences, and it is useless for one man to begin the fight, unless his neighbors all join in. The great need at present is the laying of a solid foundation of common knowledge about these things underneath the whole community. How can we do this, except by working through our schools? It is a splendid system, and the only one we have, which touches every home in the city. I am aware that in trying to introduce new lines of, so called, science work into the school course, parents are apt to say: "I did not have to learn any of this stuff, and what was good enough for me is good enough for my boy." I used to think this was a hard way of looking at things, but now I am glad people take this view of it. It simply necessitates that we make the work so good that parents will say instead: "I had no chance to learn these things

and have no time to learn them now, but I wish my children might learn them and tell me all about them."

It is high time we faced these problems. Since the occupation of the country we have been practically spreading horticultural feasts before our worst enemies, insects and plant diseases. Our leading entomologists already estimate that the insects divide the crops about equally with the farmer. It certainly is time that we have as a matter of common knowledge the fact that if a man keeps a neglected orchard, he may be causing his neighbors hundreds of dollars worth of damage each year. In a short time, with proper encouragement, we might have our school children possessed of sufficient knowledge to clear the city of these pests, and when the community is able to act as one man in the matter, it will not be so difficult.

On the side of fungous plant diseases take for a single example the black knot. Worcester is full of it. How many people know anything about it? It is really pitiful to see where home-makers have bought their lot and set out their plum and cherry trees; and then as they come into bearing these ugly knots form and kill the trees. Worst of all, the people lose heart and come to the conclusion that the world is becoming too rotten to try to raise fruit in it any more. The black knot forms as a tumor in the healthy tissues of the tree. This finally sends great numbers of filaments to the surface and these discharge clouds of minute spores into the air. The spores from a single knot, falling on healthy trees, may thus infect a whole neighborhood. The only thing to do is to cut out and burn every trace of the fungus as soon as it appears and before spores are set free. Why not teach such things as these in our schools? The material is all about us. It would cost nothing for specimens. And in a year we might have boys of twelve or fifteen able to clean up the black knots in their fathers' orchards, and be much the better both for the knowledge and the work. The same applies to a great many of our blights and rusts and mildews, but time forbids mentioning them in detail.

The subject, horticultural interests in relation to public education, has proved far too large to discuss in a single hour. I

hope, however, that we may continue to devote some earnest consideration to the matter. For some time it has seemed to me that by taking hold of the horticultural education in the schools, the Society might serve the city as it could in no other way. At the same time I can see no surer plan by which to interest the rising generation in the noble purpose to "'Advance the Science and improve the Practice of Horticulture,' so that each family in the possession of its own homestead should learn how best to cultivate its area, however contracted." A little prize money directed toward encouraging our young people to study a few of the problems of most vital importance to the horticultural interests of Worcester, must bring in returns a hundred fold, both practical and educational, not only to the entire city, but to our Society as well.

17th February, A. D. 1898.

ESSAY

BY

PROF. A. A. BRIGHAM,

RHODE ISLAND AGRICULTURAL COLLEGE.

Theme:—Japan.

Illustrated with stereopticon.

Mr. President, Ladies and Gentlemen:—I am very happy to be with you today and to meet so many of my old friends. I shall take you a long but quick journey, especially in going and returning. I will try, during our stay in Japan, to give you some idea of that strange country, so that by using both your eyes and your ears you may be able to gain information that will possibly be of interest to you. Better than this, I hope it will bring us, as a community, into closer communion with the very delightful people of the "Land of the Rising Sun." It does not take long for us to cross our own country to the Pacific Ocean, and after once getting to San Francisco or Vancouver, we take a steamship which will cross the Pacific Ocean in from fifteen to twenty days. Passing out from San Francisco, we are soon upon the broadest ocean of our globe, and right here I wish to protest against the name "*Pacific*" being applied to this ocean. I assure you that it was a great mistake of Balboa, when he discovered this so called ocean, and named it as the Germans call it, "The Great, Still Ocean." For I firmly believe that this ocean is never "pacific." It is always on the move, and generally moving in several directions at once. If you do not believe it, you should take a trip to Japan, and you will find that although the ship may be five hundred feet long it will pitch and roll to your satisfaction on this score and perhaps to your dissatisfaction in several respects.

This ocean ought to be called the "Furific" Ocean or the "Terrific" Ocean, for I assure you that it has motion enough to bring the dead to life. In proof of this I will say that on the ship in which we sailed there were in the steerage many Chinamen. The boat's company had taken a contract to land these men, either living or dead, in their native land. Two of them died on the passage over, and were embalmed and placed in boxes. But one night we had a gale and there was so much motion in the ship that one of these Celestials bounced out of his box and went rolling around the room, thus proving that there is enough motion in this Pacific Ocean to bring the dead back to life. Another case occurred upon another boat where a missionary and his bride were going out to China. There came up a terrible storm and at one time the waves were so high and the winds blew so strongly that the upper cabin was carried away. This couple were sitting in the dining-hall. As the upper part of the dining-hall was swept away the young man was swept along, too, separated from his newly-wedded wife and carried out toward the ocean. He went just to the rail and there balanced. It was hard telling whether he would go farther or come back, but the motion had reached its climax and he came back to his wife. So you see that a man who was practically the same as dead, was brought back to life. If you cross the Pacific you will find that this body of water is indeed terrific in the amount of its movement.

As we pass over this ocean we have almost no companions on the sea. During our long voyage of twenty-one days we saw nothing that had life except the albatrosses. Not even a whale was visible, and it became rather monotonous. Still we had a good company on board, and after many days we finally came to this land that I am to speak of this afternoon. This empire, as it is called, of Japan is a very long land, but is made up of very small islands, five principal and four hundred smaller ones. The empire extends between latitudes which correspond on our side of the globe to those of Newfoundland on the north and Cuba on the south. The land is in shape very much like a snake, as you will see by the map. It has a population of

40,000,000, and since the capture of the island of Formosa from the Chinese there are 8,000,000 more inhabitants to be added.

As you approach Japan the first sight, if the sky is clear, is the top of their sacred mountain of Fujiyama. As we came near this empire we saw no land that we could recognize as such, but away up in the clouds the top of this great mountain appeared, and the sun shone on it giving a crimson tinge to its snow capped summit.

Here is a picture of Yokohama harbor. We spent several days near this harbor, which is one of the best in the world, and you notice on the shore quite a number of the Japanese houses. As you drop anchor in the harbor, one of the most curious things that strikes you is the large number of little boats manned by little Japanese boatmen, who row out to the ship to take you ashore. Perhaps you will prefer to go ashore on a steam launch in a civilized manner, but there is far more fun in taking one of the little boats, or "sampans," and being sculled ashore by one of these almost naked "brownies," as we might call them.

When you come into the city of Yokohama, it is a question whether you shall go to a European hotel and have all the luxuries which you would get in the best French hotels, or whether you shall go to a Japanese hotel. Here is a picture of a Japanese hotel. The main floor is several feet above the ground, and there is a veranda running around it, and there you see the rooms inside. Those persons sitting upon the floor are in one of the guest rooms. The door on the left is one of the sliding doors that make up the side of a room in Japan. These doors slide clear to the corners on each side. They may be opened wide, or taken out as is usually the way in the daytime, in both their dwellings and stores, so practically the Japanese live out of doors. It is very pleasant and healthful in the summer time. Then at night these inside doors are drawn together, and some wooden doors are drawn together on the outside, and all is closed for the night. As you go into the hotel you are met by servants, and they are very happy if they can take off your shoes for you. I had this experience in a genuine Japanese

hotel in the northern part of the empire, on the island of Yezo. Just previous to our arrival there had been a terrible snow-storm. We came to a Japanese hotel, and I was trying to ask a man about a train that was to take us to our destination. All the time that I was trying to talk to the man who had charge of the hotel, a little boy was working at my shoestrings. At first I took no notice of the little imp except to move my foot as though I would push away an obstacle, but the boy kept at it, and had got one shoe almost unlaced when I looked down and told him to stop. He didn't understand English, and kept on and got them both unlaced and was going to pull off the shoes. I objected very strongly and effectively to that, as I didn't care to have my shoes taken off, because I intended to go out in the snowy street. This, however, is the way in which you are met at the entrance to the hotel, and usually there are plenty of servants around that are trained to remove the visitor's shoes with ease and expedition.

Your first duty then on entering a Japanese hotel or house, if you intend to stop, is to take off your shoes, because in their houses the floors are covered with nice thick, straw mats, and they do not expect you to come in and injure their rooms. This is a picture of the hand-maiden. When you have been told where your room is, she conducts you to it, and is at your service. Here are some things that are typical of the Japanese room. In the first place, you have here a little fireplace, and this is where the heat comes from in most of the parts of Japan that call for heat in the houses. You are supposed to sit down by this little stove and keep warm, and the Japanese do it beautifully, and succeed in keeping perfectly warm, as the only thing they seem to want to keep warm is their hands. Their feet do not trouble them if they are cold. They cover themselves with many "kimonas," and thus keep warm. One can keep wonderfully warm with one of these little stoves in the room. If you cannot keep warm with the ordinary clothing you have only to call for a "futon," which is much like the old-fashioned "comfortable" of New England, and you crawl under this and go to sleep. Many a Japanese has done this, placing

the little charcoal stove under the blanket with him, and the gas from the burning coal has caused his death.

Of course it is necessary to eat in Japan ; and in order that you may know something of what you have to eat, we will go into the kitchen of the hotel. Here we find three girls working preparing the dinner you have ordered. One is cutting up some roots, another is stirring up some sort of combination that you have to guess at when it comes to your room, and the one standing up at the right is washing rice, so you get some idea of the interior of a Japanese kitchen. Here three servants do as much as one servant in America. The dress of the people in this picture and the cast of the countenance is all very typical of the true Japanese. Here is the servant who will bring in the food that you have ordered. You notice, he has your dinner on his shoulder, rice soup, fish, and very rarely meat, unless you order it especially, for the Japanese do not eat meat or anything else that has blood in it. In his hand he carries a lantern made of bamboo framework, covered over with rice paper, which is oiled, and very nearly transparent, and then ornamented with figures. It is used in the hotels and also on the street when it is necessary for extra light.

After your long journey, it is necessary to have your soiled linen washed. If you would like to have it laundried in the Japanese fashion, you have only to hand it to this girl and she will take it to the brook near by. She will take a tub with her and thinks she is working very hard, but she manages to see everything that is going on. Anything especially interesting will cause her hands to stop their work, and she will get all the enjoyment possible in looking about her.

Here you see the characteristic traits of the poorest class of the Japanese. You have also in the background some of the vines that you will always find even in the poorest Japanese garden. They take care of the little patch of ground, and they always have something planted there. The Japanese backyard is a piece of art. It is always kept in perfect order and has something beautiful growing in it.

Of course while you are in Japan you wish to learn as much

as possible of the interesting things in Japan. One of the most entertaining things is to have young ladies come in and read, dance and furnish music for you. Here are two girls who can be employed to come in and read from the Japanese books or play on Japanese musical instruments in your hotel. Here you have the characteristic dress of the people of Japan. They dress differently according to their class, and according to their age. The women especially are distinguished by the different kinds of dress. A little girl will be dressed in the brightest colors, mostly crimson and blue, and as they get a little older the colors are less bright, but they are striking. The girl who is standing there has a sash around her waist. This is the "Obi," the pride of the Japanese woman. Here is where most of the money furnished by her father is invested. The sash fits very nicely and gives her a very graceful appearance. It is wound round and round her waist (five or six yards of silk or sometimes velvet), and is tied in a bow behind. You notice the way her hair is done up. A Japanese lady never dresses her own hair. A regular hairdresser comes in and does her hair up to last four or five days. It is very carefully and very artistically done.

While we are in our room, it may be of interest to have the dancing-girls come in. Here are three. They generally belong to the middle class, and to some extent are of ill repute. But here they play an innocent rôle. Their form of beauty is very striking, a beauty that appeals to some eyes but not to others. I found the Japanese women to be very beautiful indeed, with a delicacy of feature and a healthfulness of body. These girls are dancing and what are called dancing-girls, but their dancing is very different from ours in America. Theirs consists of posturing, swaying to and fro, and bending and moving the body, and they do it very gracefully. You see some of the principal postures of the dancing-girl here. They always have a fan, and that takes part in their movements and adds attractiveness to them. You notice that these girls have their hair done up in the way that I showed you in a previous picture. They wear a peculiar kind of wooden shoes.

The floor is covered with rice mats, always three by six feet in size. When a Japanese house is complete, it must be of such dimensions that each room will include a certain number of these mats. They make the room look very neat indeed. The ornaments in a Japanese room are few. Here you find upon the wall a picture and that is about all you find in a Japanese room. Any ornaments or treasures are not kept in the house, and the bric-a-brac is all hidden away in a storehouse and is brought out when their friends come to see them. In a Japanese house there is very little furniture. There are no chairs, no stools, no mantels, with a thousand things upon them, and very few if any pictures. There may be a few mottoes and perhaps a little vase in the corner where one little spray of flowers is kept. This makes the labor of the housewife in Japan very slight. When she sweeps her rooms, she dusts them first.

After the dancing-girls are through, we will invite the musicians in. Here are two girl musicians. The one on the right is playing a "koto," which makes a sort of music that Americans do not appreciate. It sounds like thumping on a barrel. The one on the left is playing a samisen, an instrument that gives out more music, but which seems to be composed almost wholly of discords.

The same room must serve for the parlor, reception-room and chamber, if in humble circumstances. This is the way in which a Japanese woman sleeps. She sleeps upon the floor, and her head rests upon a peculiar kind of pillow which keeps her head above the floor and thus keeping the hair from getting out of shape. When cold weather comes they put one "kimona" or dress on over another until they are warm enough. I remember hearing one day of a girl in a mission school who came down to breakfast with thirteen of these kimonas on. The teacher told her to go to bed if she could not keep warm without so many of these on.

I will now show you more of Yokohama. There are two parts to this city, the foreign and the native. In the native or Japanese part, you see the low houses and the narrow streets. In the foreign part the buildings are large. Here is a mission

school. Here notice the innovation in the shape of a windmill. There are some very beautiful residences on the "Bluff," as it is called, where the Americans, Germans and those of other nationalities live. This is a Buddhist temple of Yokohama. The Japanese are a very religious people. Buddhism is the prevailing religion. Here is an immense image of Buddha, and if you look very closely you will notice the man standing at the middle of the image. The man is perhaps five feet tall and you can judge of the height of this image, which must be fully fifty feet. The statue is made of copper and iron. This represents the religion of the Japanese. The face represents the calmness, cheerfulness and the wisdom of Buddha. The Japanese people rarely show pain, sorrow or anything of that kind. And if they have anything sad to tell you, they will tell it with a laugh. It is not because they have no feeling, but they wish to break it to you gently. The one who represents their religion is supposed never to be moved by the trivialties of life, but holds himself firmly above them. A woman must never show sorrow in public, nor a troubled countenance to her husband or father, but must try to make things appear as pleasant as possible. It is curious to note how through the centuries they have been trained in this way. It has resulted in this perfect politeness and unceasing care for the comfort of those who are dear to them. I am sorry to say that the husband does not appreciate it all, but rather seems to think that the woman is only a servant and was born only to increase his pleasures. When they go out for a walk the woman must follow the man and so on. But in spite of all this the woman is today the hope of Japan. The men have so much conceit that you cannot expect to teach them deeply, but the women have been trained to be modest, retiring in manner, and never to come forward except when bidden. One of the tenets of their religion is that they shall never shed blood.

Here is Tokio, the greatest city of Japan. Here is roof after roof and all securely fastened, for when the earthquake comes it is liable to shake half the city down.

Here is the agricultural building in Tokio. It is kept by the

agricultural department of the government, which shows that they are well up in architecture, and can build beautiful houses. It shows that they have been earnest and active in finding out what other nations have been doing. They send their best statesmen out into the world to gather up information. Then they think it all over, talk it all over, always improve upon it and work it out in their own way.

In the springtime you must go out of doors to appreciate Japan. Here is Tokio in cherry time. Their cherry trees bear no fruit, but they have wonderfully beautiful blossoms. Here is a street planted with cherry trees. You get an idea of some of the parks in Tokio in cherry time. The cherry blossoms in Japan are three or four times as large as our cherry blossoms.

Here are the cherry trees in full bloom in the country, and it gives you an idea of a country road. Look around you in this delightful country and you will find a pleasant landscape on every side. In some of the gardens of Tokio, you will find the gardener to be an artist. Here is one of the ways in which the gardener seeks to make a surprise for his friends. Here is an ornamental figure made out of morning-glories, and you will find images of numerous wild boars and lions, and human beings in different postures, all made out of flowers. I need not enumerate the beautiful flowers which we have imported from Japan, the chrysanthemum, the rose, the peony and others.

Some of the ladies, especially of the upper class, have to take up floriculture as a part of their education. They have to learn especially about flowers for decorating purposes. Their idea of beauty in floriculture is not one great mass, a great wreath or pillow of flowers made up of all colors, but if they want to illustrate the very acme of beauty they take one little flower, perhaps a lily of the valley, with its one leaf, and place it in a little vase, which is well adapted to receive it, and this will be the only ornament in the room. They do not try to mass blossoms in a great bouquet as do we. The longer I lived among this people the more I believed they had the right idea of floral art. If you wish to appreciate the true beauty of flowers, you do not want a

hundred of them all jumbled together, but one in its simplicity. This gives you the best idea.

I spoke a while ago of the geographical nature of Japan. You see that it must have an immense coast line, which gives it an opportunity for a large fishing business. Thousands upon thousands of the Japanese are engaged in the fisheries. The laboring class live almost entirely out of doors in the summer-time, and that is, I think, one reason why they are so healthy. If you were there on a holiday, you would find all ages and sizes out in the streets and public gardens. Here is a coolie or a man who works in the warehouses or stores. He has upon his back a character which designates his position in the store. Here is a man wearing a native dress and having an American hat upon his head. They are trying to adopt civilized costumes, as we call them, and they are many of them doing it by halves.

The people love to get out of doors. They love gala days and festivals. This is evidently one of their festivals. Here is a ceremony of a different nature. It is a funeral. The priests at the head are reading in the rites that take place at a Buddhist funeral. Those on the left are the mourners. This is the inside of one of their temples. This funeral is at the cemetery. The coffin is a large white box. The Japanese does not lie in the coffin but sits in it, and the coffin is usually white. These ladies dressed in white are mourners. The mourning costume is almost always white, not black like ours. It is a custom which I think is ahead of ours. It seems to me that it is the right color, if you propose to have a peculiar color for so sad a time.

We will go away from this capital city of Tokio towards the city of Nikko. As you journey from Tokio you can go on foot or be carried in a jinrikisha, or you can go by rail. If you wish to see the country you will go on foot. You will find by the roadside occasionally a tea-house. Here is one. The Japanese loves to rest and he does not go far in a day. The tea-houses are scattered at intervals along the road so that the traveller can stop and rest. He sits down and while he is resting the tea is brought to him. He rests perhaps for fifteen minutes or a half-hour and then goes on to the next tea-house. These are very

beautiful resting places. The people are polite and kind and it costs very little to stop at one of them. A foreigner going to Japan for the first time should stop at one of these places if he wishes to study the customs of the common people.

They have beautiful roads in Japan, roads that have been in use hundreds and hundreds of years.

Here is a Japanese maiden with her usual burden. When a baby is born it is almost immediately put upon the back of the grandmother. Then if another little tot comes along it is placed upon the back of the first child, and so, in passing through a Japanese village, wherever there are two feet there are two heads. It is rather bewildering. If there is no girl to carry the baby, then it is tied to the boy, and if there is no boy it is strapped upon the back of the grandparent, the first upon the grandmother and the next upon the grandfather. If there are no grandparents, the uncles and aunts are brought into use. This burden does not seem to trouble them at all. The girl here will play as if she had no baby on her back.

There are so many blind people in Japan that many years ago the emperor gave them the exclusive right to shampooing. These blind shampooers made a good living. Their peculiar whistle was one of the most weird and strange sounds that I heard in Japan. I came rather to like the noise of it. The people were very kind to the blind shampooers and they always have the right of way. Somebody will call out to one of them to stop and he will go in and perform the massage movement for anyone who wishes to have his aches and pains taken out of him, and in this way they get a living.

Japan is the only place in the world where you get anything like the color of the American maples in autumn. This is a sort of ambulance on wheels. The lady is in the middle, the men carry it on poles over their shoulders, and the servants walk along beside it. The Americans find it very difficult to ride in these cages, as they call the kagos. It is a good deal like the Turkish way of sitting on the lower limbs.

As you approach the beautiful city of Nikko you see a great many beautiful trees that are something like the Redwood trees

of California. They make the most beautiful groves and forests that I have ever seen. In going to Nikko you see a beautiful bridge. The emperor is supposed to pass over it once a year and no one else is allowed to go over it. Gen. Grant was given permission to pass over it, but he wisely said that although he thanked them for their kindness and courtesy in offering him the opportunity, he would go over by the common bridge. Nikko is very picturesque, it is a city of temples.

Here is a two-wheeled hand-cart or jinrikisha. This man can go forty miles a day and be ready the next day for forty miles more. When you first get into one of these carts you wonder which way it is going to tip. There is something about the motion that makes you laugh. It is a nice way to travel if you like it.

The Japanese claim to trace their ancestry back 2500 years. Their first emperor was supposed to be descended from heaven. It is wonderful indeed to think that they have been a nation as long as that. And they sometimes laugh at us when we pretend to be so much more civilized than they. You find a people who when we try to teach them claim that they were civilized long before we were. They were a civilized people when our ancestors were in the northern part of Europe, dressing in bear skins and living in caves.

On the temples you find decorations illustrating fables which the Japanese mothers tell their children. It is one way of telling the old, old story. The monkey on the left is holding his hand over his ears so as to hear nothing bad; the one in the middle is holding his hands over his eyes so as to see nothing bad; and the one on the right is holding his hands over his mouth so as to never say anything bad. In Nikko at the very top of the mountain is a mausoleum or tomb and shrine where the first Shogun is buried, and that means a good deal to the Japanese. Way back in the thirteenth century the emperor was dethroned by his chief soldier, and for centuries the empire was governed by this chief soldier and his descendants. The real emperor was put into a palace and his descendants were kept there hundreds of years, never appearing before the peo-

ple. When a child was born who was the true emperor of Japan he was allowed to hold the office but always under the control of this Shogun. And when the young man came to years of discretion he was compelled to take upon himself religious orders and become a monk. So the empire passed on to the next in rank and the real emperor was never actually ruler. Until forty years ago he was not allowed to come into power and the nation was really governed by the soldier class. They had a feudal system and the tyrants ruled, the stronger tyrants over-ruling the other tyrants, and making them pay tribute.

Here is a man riding on his little Japanese pony. The servant is at the head of the horse with a bundle of rice on his back. The man is going on a pilgrimage. It is a peculiar custom of the Japanese of the lower class to go on pilgrimages to visit great mountains or shrines, and you will see parties of a dozen or fifteen of them going on foot to visit one of these shrines and pay their vows to their deities, and to pray for good harvests and so forth.

Here is a Japanese dressed in his rain cloak. It is made of rice straw which will shed the rain perfectly, and the hat on his head will keep off either rain or sunshine. Here is a Japanese at work in the field with a *kurra* or bog hoe. It is a very rough implement but it is the implement with which the thousands and thousands of acres of Japan are cultivated. The men will work for a while and then stop for a lunch. They have to eat four or five times a day. Here is a field of rice. Rice is the chief product and the Japanese grow the very best in the world. These farmers alternate between smoking, lunching, and working. If a neighbor comes along they have plenty of time to talk with him.

Here is a Japanese woman going to market. She has her basket filled with cabbages, which she is carrying to special customers. Her basketful is worth two or three cents. She has to carry it a mile or two and sometimes back again, and then comes back the next day with another load.

The "*daikon*," a kind of turnip radish, is the favorite vegetable of the Japanese. One way of preparing it is to pickle it

and put it away in a cask until it becomes so strong that it would drive you out of the house.

Here is a Japanese farmer threshing barley. You notice that this man takes a sheaf of barley and pounds it upon a wooden block. Here is a Japanese girl reading. Her head gear is something enormous. Here are some Japanese wrestlers. They are lusty fellows and although they look very plump and fat it is all muscle. This is one of the greatest amusements. The wrestlers come in, thirty or forty on a side, and as soon as one falls another jumps up to take his place, and so they keep going and coming. The practice of wrestling is hundreds of years old and it is not considered disgraceful to be a wrestler. They often wrestle before the emperor himself.

You can always tell the widows in Japan by their short cropped hair. One of the empresses of Japan, when she took a husband, made a vow that she would abstain from worldly pleasures. She blackened her teeth and pulled out her eyebrows, and this practice became the custom for married women.

Here is the way in which a Japanese woman salutes her friends in parting, and with this in closing I salute you, thanking you for your kind attention.

24th February, A. D. 1898.

ESSAY

BY

REV. G. W. KENT, WORCESTER.

Theme:—What the Roses have taught a Minister.

Mr. President, Ladies and Gentlemen:—It is not only an honor and delight to address you this afternoon, but I feel an inexpressible relief and comfort in times like these, when the air is thick with threats and rumors of war, to turn away from it a little space and talk to you who cherish and cultivate that art which I think you will find through all ages has been the gentle genius of Peace and Good-will. Indeed, do we not know that man first began to turn from his wild, fighting savagery when he settled down and began to cultivate the soil? I hope to find for you this afternoon, as I trace only a single chapter in the art of gardening, the better and gentler meaning which lies, I think, behind the sad secret of man's fierce, selfish, combative nature.

Let me confess at once I know nothing of the technical, practical side of your art of gardening. I hardly know one tree or shrub from another. I feel almost ignorant enough of such things to join the ranks of those who have assailed the devoted and disinterested service which your beloved and honored President has given to the city, only that I have a little sense in my ignorance. I simply look up with wonder and reverence to those fortunate people who have love and genius for gardening, and I realize that there is health, happiness, and profit in it if you only can; I can't, but I can appreciate it in

those who can. Just think of fulfilling the old prophetic vision, comforting earth's waste places, making her desert blossom as the rose, rendering the wilderness like Eden! When one's own wilderness persistently remains a wilderness, and one's little bit of desert refuses to blossom with anything but a few good-natured dandelions, one can appreciate good gardening in others, I can assure you. The fact is I had a garden before I came to Worcester; fortunately I had a good old neighbor, too. I remember I used to toil with exertions that were something frightful. My back used to ache as his never did. I used to read up until I could talk gardening in a way that simply overwhelmed him, and yet my flowers would never grow, at least never to anything but leaves, and my vegetables never came to enough to feed the caterpillars and grubs who forced themselves upon my hospitality. If it had not been for my good neighbor, I should have fared very poorly indeed. What a happy man it made him! I used to envy him a thousand times. He seemed able to forget all frets and weariness and meanness. He was in politics, and in his garden he seemed to find some relief even from the turmoil of politics, and things must be pretty soothing to quiet a man's mind under such circumstances, as our Mr. Walker could assure you. His flowers and vegetables seemed to be so companionable, they never quarrelled, and as you know by your experience, no doubt, they reward the least attention and kindness a hundredfold and more. Being an ignoramus myself, as to the technique of the art, I have had to content myself with what is really the minister's main business—the study of relations. Let me show you what I mean. The manufacturer, the merchant, the mechanic, knows immeasurably more about the way, the technique, the process, the pushing of his business than I do. The mechanic knows about his tools, and has a skill to use them in a way that fills me with wonder and despair. The farmer knows more about crops and cattle and soil in half an hour than I am afraid I shall in all my life. Even the liquor dealer knows how to work that miracle, how to make ten-year-old whiskey in ten minutes in a fashion that I should never dream of. But

there are certain large relations of each man's business to the world's business, to society, to human welfare; and no man knows so little of those large relations of his business to what is right and true, as the man immersed in his own business. He is like the engineer down in the hold of the great ship; he can make the thing go, but to pilot it up on deck, to see where the thing is going, is beyond his power.

There are great meanings flashing out all the time from the farmer's craft, out of the mechanic's handiwork; great revelations of truth showing our relation to human life, to the whole universe, which, I think, it is the minister's business to be looking up all the time. There are bright revealings that I can trace amid the daily toil of you business men, great shinings out of honor and mutual trust, revelations of hope and promise, showing me the way of God. I was always intensely interested in these larger relations of things, about the technical merits of which I might know nothing.

When I was a boy in England, there lived almost next-door neighbor to us a very learned naturalist and scientist, one who has written a number of books which to a wonderful degree explain the great problems and secrets of science to beginners, Mr. Clodd. Many of you have read many of his books. And it was just at the time, that is when I was a boy, when science was turning from the endless business of labelling, cataloguing and classifying all the different species to the immensely better business, it strikes me, of reading the meaning of the differences between them. I remember how he used to talk to us children of the beautiful, the wonderful relation of each little flower to its fellow and the great life-history of the world, and that is how I came to find my sermon for today.

If I were to take a text for it, and we ministers can hardly preach a sermon without taking a text, I should, I think, take the old Hebrew prophet's hopeful and happy view of the day to come when "Instead of the thorn shall come up the fir tree and instead of the briar shall come up the myrtle tree." But I think we English children would like the prophet's hoped-for day to be postponed as long as possible. I hardly know what

the English boys and girls would do without the thorn and the briar. The hawthorn and the sweet-briar are England's fragrant and beautiful gifts to the country-folk in all that little land. We hardly find a cottage in all her lanes and byways which has not a bush by its doorway of the sweet-briar. I wonder how many thousands of Englishmen there are scattered about the world, in busy American towns, on Canadian farms and Australian sheep-ranches, and in Indian cotton-fields and African gold-mines, who, if across their pathway were to come the fragrance of the sweet-briar, would be carried back, as a perfume will carry one back, to the scenes of boyhood; loved and cherished scenes of the little cottage and the mother's ways about the house. Then the hawthorn;—I suppose there was not a boy or girl who did not go Maying, which was, as is meant there still, to go after the white and fragrant blossoms of the May or English hawthorn. And what scratching of hands and tearing of clothes it meant, too!

You are more or less familiar with the hawthorn, and have seen great bushes, even trees of the cultivated variety, growing up about our city. It forms those green hedges that separate the fields and farms and roads in the place of fences and add so much beauty to the English landscape. Let me say that the hawthorn hedges almost invariably, in the moist, mild English climate, grow a wall of green to the very ground; its white flowers are the joy of the bees, the butterflies and the children, and its red fruit, or haws as we used to call them, are equally the joy of the birds in the winter-time and the hungry children at all times. Its thorns make it a farmer's hedge which no cattle will try twice to penetrate.

I can remember no happier experience than when the spring-time came (and in my part of England, down in the South, it is beginning to come already), and the days grew longer, and the air sweet and warm, and the hedge-rows blossomed, going after the May and coming back all scratched and torn, but bearing triumphantly great masses of the fragrant blossoms. I wish I could transport you to an English country-side in an English spring, so fragrant and so musical. It seems to me, —

it may be a bit of prejudice, however I notice John Burroughs repeats the heresy,—that our birds sing more in England than here. It may be that multiplied centuries of the companionship of men have made the birds more tame than here, where we have not a thickly populated country yet. Then the wild flowers, in that moist, warm climate are more abundant among the hedge-rows that meet the sight everywhere. But the joy of going Maying I know was just in the going after all. And it is an old, old, wonderful story, this Maying. It leads to what I want to say to you this afternoon. The English children are late comers at it. Why long, long ago, before there was an English child, or any human child, the bees and the butterflies and the tiny creatures of the air, went a-maying.

The blossoms and the insects, as of course many of you know, grew up here together in the great process of creation. Where we find no trace of the birds or butterflies, there we find no trace of plants that blossom and fill the air with fragrance and brightness. We find instead tokens of a great rank, blossomless, colorless vegetation; and you know the familiar story which Mr. Darwin tells us so eloquently in one of his books, upon the fertilization of the plants by means of the insects, who take their pay in honey. He tells us how the blossoms and the colors of the flower make the plant's advertisement, "Honey here!" and for that simplest little service it offers that sweet reward.

The first human children and their mothers and fathers found the flowers here; of that we are pretty certain nowadays. And what is all this talk of endless competition in the world, so hard and selfish? Why, it has been a matter of mutual helpfulness and co-operation from the start. I know of no better illustration of it than the way in which the bees, the butterflies, and the blooming plants have grown up together, owing everything to one another's mutual love. The hawthorn flower and the hawthorn fruit are full of meaning, more than I can tell you in the time you can allow me.

I dare say you have seen the little fruit of the hawthorn. The way we children used to cull it and love it! I remember

a summer or two ago as I took a walk from Stratford to Shottery by the same path across the fields that the young Will Shakespeare took when he went, his young heart beating high with hope and love, to woo and win Ann Hathaway. I remember that the walk was by a hedge all red with the little fruit of the hawthorn. I got my pockets full to bring back with me to America but I don't know what became of them; I am afraid that boyhood's habit asserted itself and I must have eaten them unconsciously.

I remember the delight of the discovery made by me from a hint of Mr. Clodd's, that the hawthorn and the rose and the apple and the strawberry are all sisters of one family, all roses. I can recall yet my childish delight in tracing the family relationship. About the only particular in which it can be traced is in the five petals of the flowers of the wild rose, the apple, the strawberry, and the hawthorn.

The roses and the birds grew up together in the great process of creation, and there we have a bit of that Altruistic co-operation rather than fierce competition in nature. The birds wanted food and the roses wanted their seeds scattered, so the roses enclosed their seed in a hard, indigestible covering or shell and then put about it a soft, attractive pulp so that the birds in feeding themselves would at the same time help the roses to scatter their seed. And you notice how ingenious the rose is, whether it be the apple or strawberry or what not. How cleverly it keeps its fruit green until the seeds are ready, so as to be unobserved by the birds, and keeps it sour, so as to be unattractive to them! And then how those sisters vary in the way in which they set the seed in or about the swelling of the stem that makes what we denominate the fruit. The strawberry, with its luscious swelling of the stem, and the seeds like tiny nuts scattered on the surface; the rose and haw, with their swelling of the stem, and the seed inside of the fruit, as it is too with the apple. Then again mark the difference:—where the rose has plenty of seeds to spare, as in the strawberry, raspberry or apple, the seed is not very carefully protected; but when there is only one to each fruit what a hard shell, as

in the peach, is put about that single seed to save its life. The raspberry, differing from the strawberry, has its seed inside of each luscious globe of fruit, and this fruit can be pulled off the stem, while the blackberry, you notice, has its seeds covered in the same way but its fruit is fastened to the stem.

The progress of the rose family is a recent matter, just as the fruit-eating birds are recent. The primitive birds were carnivorous altogether. The later more graceful and attractive ones are fruit-eating, and practically they all came in together with the Tertiary epoch. We find their earliest remains in earth so recent that as yet it has not hardened into rock or stone. May I not fairly say here of this rose family that in it we have one of the noblest families from our point of view in the whole vegetable world. It is a family that has grown up together with man, and it has given him some of his best friends, good friends to cheer the sight of his eyes and delight his sense of smell and to satisfy his hunger. It has raised him up the apple, pear, plum, peach, almond, blackberry, strawberry, raspberry, and dewberry,—and I dare say I have left out some. Think of the leafy shade, of the radiant bloom, of the sweet scenting of the air, and the luscious fruit these different sisters of the one family have produced for him. And all from some primitive, colorless, scentless, flavorless rose that probably we would not recognize to be a rose at all.

But, then, if we are to think of the foliage and the flowers and the fruit we also have got to think of the thorn and the briar. The hawthorn and the crab-apple with their angry teeth, and the blackberry and the rose with their spiteful thorns. Well, how did such things come? There is a problem that I want you to meet with me this afternoon. We have one of men's earliest ideas of how thorns and prickles came, preserved to us in the venerable old book of the Bible, the book of Genesis. It is that they came as the curse of God on man for Adam's disobedience. "Cursed is the ground for thy sake, in sorrow shalt thou eat of it all the days of thy life. Thorns also and thistles shall it bear unto thee." Well, when men imagined such an origin for the thorns as that they had not yet

learned the secret of them, that is all. Let us read the later solution. We have to-day I am told,—I do not know anything about it, but so I am told,—we have over two thousand varieties of that wholesome, delicious fruit, the apple. Two hundred years ago there were less than one hundred varieties, and when we go so far back as the time of the Romans, while they had the apple and the pear, from Pliny's description of them, Mr. Darwin concludes that they were a fruit so sour and hard that today we would not tolerate them. When you go back to Adam's day the apple was nothing but a bush of savage thorns, and the fruit was so sour and hard that the old tradition that Eve tempted Adam with an apple is put out of court entirely. It would have offered no temptation, the first bite would have been enough. I doubt if he could have bitten the thing even.

The deepest meaning of that thorny bush was hidden yet. The book of Genesis says that thorns came as a curse to man. The difficulty is with that idea, that as a matter of fact we find the remains of tooth, claw, talon, beak, spine, and poisonous fang ages upon ages before a human being trod the earth. We can hardly blame man for it all, for he proves an alibi, he wasn't here. But more suggestive is our discovery that thorns at least were not original creations at all. They were simply twigs which for the time being had more important business to attend to, and had given up the function of bearing leaf, flower, fruit, and had developed sharpness. They did this purely as defenders of the mother plant. Plant life originally,—for we find the plants and so know what we are talking about,—in those early times when the earth's atmosphere was hot and humid, and the air was charged with carbonic acid gas, as it is not today, plant life was of a rank, weedy, spongy sort. It was soft, and as soon as animal life could be supported at all it was devoured by those huge "Dragons of the Prime." Now many of the juicier, softer, sweeter plants, of course, were rendered entirely extinct, feeding those great creatures which made the beginning of animal life upon the earth. Those few that chanced to be hardest and least palatable survived to pass

on to the next generation. So by this law which Mr. Darwin has so completely explained, this law of the survival of the fittest, those plants which developed hardness survived in the great processes of creation.

This "Survival of the Fittest," just as when the gardener prunes off and digs out what he does not want to grow and thrive, cultivated the hard, strong, inedible plants.

Now let us turn, having in view that process, having in mind that earliest way of gardening before man was here to do it, to the primitive mother rose. Of course, her main business in life, for her life depended upon it, was to save herself and her little ones, her seed, from being devoured by some huge Mastodon or Mammoth, and to this end, by that same process of the "Survival of the Fittest" she raised a standing army 100,000 strong; her twigs gave up the function of bearing fruit and took up defensive measures, became sharp and drove off the huge creatures which would have made short work of the mother plant. But for the thorns we would have, today, no rose nor strawberry nor peach nor any of those other delicious plants of the rose family.

But the best remains to be told, and it is a little like the story of our citizen soldiers, the story that we are ready to duplicate today if need be. You remember how it happened thirty years or more ago. Men of peace they were, those men of Massachusetts and New Hampshire, of New England, and all the North, men of peace they were; but when the country cried out to them for help, when the Union was in danger, then those men of peace who hated war, who knew the joys of home life, who loved the little ones and the wife, and clung to the prosperity and the comforts of a peaceful home, those men of peace laid aside their instruments of peace, took weapons in their hands, and went forth to kill and to be killed, if need be. We know the noble story of what they did, that as they went 100,000 strong from here up North, they went singing, "We are coming, Father Abraham." They were going, if need be, to death itself. But when the war was over, when the Union was saved and the slaves free, then these same men who had

tasted the fierce delight of war, when the need of war was ended, came back to home and shop and farm again, took up their instruments of busy toil, and became once more the men of peace they had been. That, to my mind, is the noblest part of the story of our soldiers. That is precisely what the thorns have done.

Take the beginnings of our apple tree, of our Baldwin, our Pippin, our Gravenstein, without a thorn from stem to farthest twig. They had their beginnings in that hard, stumpy, thorny, savage crab-bush. Man took the thing, hunger compelled him to eat its fruit, and he found that with proper care it began to take on sweetness and harmlessness. He protected it, and gave it nourishment and sunshine, and so the long process went on until we have our wonderful varieties of apple, peach and plum today. In England, I remember we boys used to go after what we called "sloes" in the later summer-time. What fun it was! But what anguish both at the time and generally afterwards! They were a species of wild plum, but it was growing into tameness. You could eat the thing, and such disastrous results as I have hinted at would be pretty sure to follow. But the wonder of it to us was that on that wild plant we would find innumerable thorns which were giving up their soldier life, and out of each side of these thorns would be tiny little leaves, and the fierce sharpness of them was disappearing. They were turning back to twigs again. And that is the process that has gone on with the apple and peach and cherry, all those delicious fruits. You know how we cultivate the hawthorn, which makes such a thorny hedge in England. We can cultivate it out of thorniness. We have varieties of roses already in which the thorns have been cultivated out. We have given all our attention alone to producing fragrance and beauty in the rose and have neglected that particular, letting the thorns come on them, but if we wish, in less than a hundred years, we can have our roses without thorns.

All this is of vital interest to me as minister, in a different way than it is to you, as horticulturists. The glorious conviction comes to me that the thorns of human character, the hard,

savage, sour, unlovely elements of human nature came about by the same divine process of creation, and are to be turned to sweetness, fragrance and beauty, in the same glorious and blessed process. The ferocity of man, the selfishness of man, the fierce self-assertiveness of man, came in answer to the same demand, in answer to the same environing conditions. Those thorns will all be changed to branches of peace, bearing fragrance and fruitful bloom of kindliness, generosity and love. There we have the secret of the great sore puzzle of man's selfishness and hardness. Let the rose interpret the problem for us.

The baser side of human nature came in answer to the necessity that he plant himself, first of all, firmly and tenaciously as a creature of the earth, just as the old wild rose had to do; to root himself deeply in that soil upon which he must live and out of which he must be able to wrest a living. The physical man had to be first a wild, fierce animal in order that by and by he could grow to be a nobler man. The fact is that strong, fierce self-assertiveness, at that time, was the law and condition of his survival. He came into a world of savage beasts; he came into a world where he had to fight cold, storm and hunger. No armor-plate for his protection, no speed like that of the horse, no strength like that of the lion and elephant, and he had to put in its place strength of brain, to have cunning, obstinacy, fierce self-assertiveness, tremendous masterfulness. Man had to look after number one or else some lion or tiger would have been the foremost creature of the earth. He had to assert himself, to resent injury, to establish himself, as I have said, with strong passions and strength of will. He became as hard and savage and thorny and unassailable as that first crab-bush. He became all that, not merely passively as the crab-bush did, but he became it aggressively and made himself master of every creature in the world. There followed from that a result of vast, of sacred significance. Thus he won dominion over the creatures of the earth. Thus he secured freedom, leisure and opportunity to rise out of these animal beginnings to something finer and nobler. These passions of the wild beast rose to

nobler ends. This resentfulness, resentfulness at first of mere attack upon himself, became a resentfulness of injury to others and hatred of injustice and oppression. This strength of will became a will for righteousness.

Thus in that old conflict there was wrought out that steel-like temper of character, that iron will, that force of soul, which God wanted in his making of a man. We see it yet in a Luther, a Paul, a Jesus Christ, men with capacity for holy anger, men who could fight, fight a life and death battle if need be. Now, in our own day, I think there dawns at last the time of our divine completing. Take this old, fierce, wild passion and assertiveness, and sweeten and sanctify it, leaving all the splendid strength of old, but putting it to holier uses; glorify the old skill, by leading it out of cunning into wisdom and generosity; make god-like the old strenuousness, by making it instead of self-assertive a mighty will for righteousness and others' welfare, and you will render this King of Beasts the King of Souls. That is the task the roses teach me. It is no easy one. Still there is the old need of self-defense and self-assertion. I do not wonder that the old selfishness survives, that men still look out for number one, that still they practice cunning. We have to root ourselves as firmly as ever in this old mother earth of ours. We have the same old cold and storm and hunger to do battle with; and still there is a need of splendid wrath against oppressive cruelty, against cowardly infamy whenever we find it. I think we still ought to know how to fight, if fighting is to be done. With Thomas Hughes, I am dead against crying "Peace!" when there is no peace, and is not meant to be any. But better than that, I think, is the great task to-day of learning to be master of the old Adam. There is nothing to be destroyed. Remember the vision of the old prophet that "instead of the thorn will come up the fir tree, and instead of the brair will come up the myrtle tree."

We have a happier sight than that old prophetic vision. We have the thorns and briars not exterminated, but bearing leaf and flower and fruit, turning back to twig and leafy branch again; and that is better than exterminating the old briar and

thorn. We have the very sight before our eyes of such God's work going on. The old man, harsh, fierce, selfish, savage, is not to be destroyed, not destroyed at all, no element of his power is to be wiped away. But out of the old man, strong, stern and fierce, the new man is to grow. The strong, stern, unlovely elements becoming the strength of holiness, the stainlessness of purity, the perfectness of love. That is the lesson, which in utter ignorance of the things themselves, the roses have taught this minister.

DISCUSSION.

Mr. Harrison.

Mr. Chairman and Friends:—

I have been highly delighted with these remarks this afternoon. I am intensely interested in the subject. I believe in the mission of beauty, in its power to help humanity; and as has been outlined, beauty was unfelt in its loveliness on earth at the time of the advent of humanity. The vegetation of the carboniferous age was not beautiful, it was left for the goal of man to make beauty rise on every hand. We are told by mineralogists that even the diamond and the sapphire are comparatively recent productions.

In the West where I have been so long, I have rejoiced in the evangel of nature, that beautiful evangel which reveals God's infinite love. "The wilderness shall blossom as the rose." Out there in the wilderness the rose has its mission. There is a man on this great prairie who not only chews tobacco, but eats it, and it is hard to tell where the plug leaves off and the man begins; he becomes the plug himself. I have seen him go to the store to sell his wife's butter and eggs, and get fifty cents for them from the grocer. He would then buy forty cents worth of tobacco, and ten cents worth of sugar for his wife and take it home and eat three-fourths of that himself. Now when you come to bring him into contact with a higher civilization, and under the influence of beauty you make a different man of him. You cannot save the old man, but you can the boys, and wonderfully assist the girls.

I have been impressed in going by some of those sod houses to see the "Survival of the Fittest," to see that some of the women have retained the home love for flowers. I remember one lady's house, in particular, which was called the "brownstone front," where the most charming flowers used to grow. We used to drive out of our way to go past her house, and take in the marvellous contrast between that sod house and that beautiful bed of flowers. There is something taking in flowers.

Several years ago a gentleman travelling through the Rockies fell in with a rough sort of a fellow and was afraid of him. But they climbed up to a summit and there was revealed one of those beautiful perspectives, valley, mountain, and plain. His companion stood absolutely entranced and looked upon it. And the man said, "Then I dropped all apprehension, my friend, of that fellow. The man that appreciated beauty was, I knew, a safe man." Beauty is the alphabet of the revelation of the hereafter. The mission of the beautiful is to make us better, and to teach us of the hereafter.

I remember a beautiful little child in Minnesota. She came to lie down and die with the dread diphtheria, and there came to her a vision of beauty. She told her friends of the wonderful farm through which she passed. It was so lovely and there were such flowers there! Then I thought of the sweet fields beyond, the swelling fruit, the never-withering flowers. I remember during the great exposition I was lying at the point of death with the rheumatic fever, and thought I was going over to the Border-land. It seemed as though the way was very open and plain. I remember one night there came such a vision of splendor as I never dreamt of. My friends were all at the Chicago Exposition and they sent home a letter with regard to the splendor and beauty of that wonderful exposition, but it could not compare with the beauty of my dream. I thought I saw a vast field of unspeakable splendor, with chrysanthemums towering up like trees, all one blaze of beauty. There were roses in vast varieties, and flowers such as I never saw before! Well, he is able to do abundantly more than we can ask for.

These things make us better. They are God's evangel of beauty, and therefore the horticulturist has a wonderful honor conferred upon him, for the lover of flowers is brought nearer to the love of the infinite and the beauty of the Lord is upon him.

I am very glad to meet you; I am glad to have a chance to say a word, and exceeding glad to hear our brother here, the minister, tell of the wonderful opportunity for growth. All these things belong to us; they are our heritage; we claim them as our right.

Out in Kingfisher County, Oklahoma, we are starting a college and we want to have a horticultural department. I believe the better way to do is to encourage them, to let them realize what can be accomplished. The girl is very nearly related to the beauty of her flowers; you can hardly tell where one leaves off and the other begins. What we want is to teach the girls of the West that they can wield the wand of the magician, and clothe the prairie with beauty.

Mr. Record.

I have listened with a good deal of interest, and if I had power to convey my ideas I would make some remarks, but I would simply say that I have failed in my efforts in the past to see that process of development that had been expounded to us in nature. I had rather fall back on the religion which we have given us in the Scriptures, and which, I think, no science has yet, or ever will, entirely upset. They may at first seem to contradict, and I think that even Mr. Darwin has got on some wrong tracks. Our brother has not told yet in just what form the flower or rose started, but has given us to understand that by reason of its hard surroundings it was obliged to put out these organs of self-defence. I do not know but man by reason of his hard surroundings has been obliged to put out this very perverse nature which we see working all through the world, still I believe that the final regeneration of man will come about in some other way than by merely cultivating that which is in us. I believe that Jesus Christ said, "Ye must be born again,"

or, in other words, "born from above." I believe that I shall not be developed from without.

We have civilization, we have a wonderful development of horticulture, manufactories, science, and political art; but what are they? We are the peers, in some respects, of the savages of ages gone by; and yet when we look at the strength of the efforts that we have made in our political affairs, it has sometimes seemed to me, it is the same barbarism refined, for we have as hard a time to fight our fellow-men as the savages did themselves.

If I had more time, I would like to say something on the war question. While the thought expressed in the lecture was very beautiful, and some of the ideas, yet as far as the ethical part is concerned, I should certainly take some decided exceptions.

Mr. Knight.

I was reminded of a story of Mr. Lincoln, which I think has never been published, and yet, undoubtedly, it is true. Some years ago I was on a business trip in New Hampshire. I met an old gentleman at Whitefield. He had been one of the leading men of Whitefield, and one of the active men during the war, and with two or three others from New Hampshire was in Washington looking after the New Hampshire troops. They had finished their business and were ready to start for home when one suggested that they call on Mr. Lincoln, perhaps they could say something to cheer him up in the midst of his care. They went and were met at the door by an orderly, they told him who they were and what they came for. He said, "I will speak to Mr. Lincoln, possibly he will see you." He came right out and said, "Mr. Lincoln will see you now." They were ushered into the presence of President Lincoln. He received them very cordially as gentlemen from New Hampshire, and invited them to take seats. He said, "A pretty, fine country you have there in New Hampshire, I think. I was out that way some years ago, and the cars stopped and I went to look out the car window. I saw a bumble-bee hanging on a thistle." This was, of course, a pretty keen satire on New

Hampshire. I have made, you see, a thorough study of the question.

Allusions have been made, and properly, to our sisters in the cultivation of flowers and the fine arts. I used to notice on the mountains of New Hampshire a red house or hut, and then if I looked carefully I would see a plot of flowers at the window or door, showing that someone of refinement lived there and had a home there in those barren, bleak mountains.

Our friend from the West, I should know by his breezy style had been out on those great prairies. I was in Kansas ten years ago last summer from the early spring until the latter part of July. By the first of July there came on one of those droughts that dry up every green thing. I saw thousands of acres of great rank grass, such grass as I had never seen before, go out of sight practically in two or three weeks. And what is this I see on the part of the ladies, who have a plot of flowers in their front yards? When the thermometer was up to a hundred or a hundred and ten degrees, two or three hours in the forenoon and two or three hours in the afternoon, they stand over their flower beds soaking and soaking them, trying to save their flowers. Some of the flowers died but many of them lived. Yet if it had not been for the patience of those Western women the flowers would have faded and the grass withered and dried up. I do not care to take up the theological side of it today. As I look at it, whatever God has created in this world, at the outset he has made it a perfect work. I have no doubt that the first man and the first woman that appeared in this world were perfect specimens morally and physically. And so with every plant and every leaf that we put under a glass we see that its outline is perfect; and I do not believe, I cannot believe, in this theory of evolution, that man came from an ape or monkey, and the flowers and the fruit came up from the crudest forms. I do not see it in that way, and I have no doubt, as our friend has alluded to the fruit with which, according to the Bible records, Eve tempted Adam, that it was very fair to look upon. I accept that record as true. I hope in the consideration of this question we shall fall back upon that which

seems reasonable, which seems to be sensible. God never made any blunders in his work. It has been man's blunders that have led us into trouble, and his selfish and crabbed nature.

The main thing for us to do my friends in this world is to make it better, happier, and purer in every way, and so let us come to the fountain of all love and learn what we may. I told you that while apparently every day brings something, yet it has not come true, for there have gone out in the ages past wonderful developments of science and art. I will not prolong these remarks only to say that we do not know what science is going to develop tomorrow. So far it has not upset the record so far as I know, and I do not believe they ever will.

Mr. O. B. Hadwen.

I have been exceedingly interested in the lecture. I believe nature has been wonderfully assisted by man. From the sweetbriar of English origin we have thousands of the most beautiful roses. It has been brought about by hybridization, and by the progress that has been made in the past. We can hardly measure the progress to be made in the future. The English hawthorn has a great variety of colors.

No one shall foresee or foretell what we shall raise a hundred years hence. Fifty or sixty years ago there were very few roses that I recollect, and I had an opportunity of knowing something of them, and today we have such a wonderful variety. There is not a land on the face of the earth that is equal to England for growing the rose. We have in this country Newport, which approaches England in its climatic condition.

3d March, A. D. 1898.

ESSAY

BY

EDWARD W. BREED, Clinton, Mass.

Theme:—Water Gardening.

The subject of Water Gardening that we are to consider this afternoon is a most ancient as well as neglected branch of horticulture. It has a history contemporary with ancient Egypt.

The sacred Lotus of the ancients seemed to occupy the foremost place in aquatics; for sculptured representations of it abound in Egyptian temples, proving the veneration paid to it. The worship was by no means confined to the ancient Egyptians; for in India, Tibet, China, and Japan the plant was considered sacred and is still employed in regular ceremonies. Homer and other poets have sung its praises. Herodotus, Strabo, and ancient writers have referred to it. In literature, architecture, and culture it held a prominent position. Egyptian monuments bear representations of the Lotus and Nymphæa. The sacred Lotus is not now found in Egypt; but two varieties of Nymphæas or Water Lilies, Nymphæa Lotus called the White Lotus, and Nymphæa Lotus cærulea, the blue lotus, abound. Drops of water on the leaves of the ancient or sacred lotus, Nelumbium Speciosum, look like molten silver and quickly roll off. The Hindoos have a proverb founded on this peculiarity of the leaves, to the effect that the good and virtuous man is not enslaved by passion nor polluted by vice; for though he may be immersed in the waters of temptation, yet, like a lotus leaf, he will rise uninjured by them. The spiral fibres which abound in the leaf-stalks are carefully extracted and used as wicks to

burn in the temples of India before idols. The root-stock and seeds are eaten as food in China, India, and Australia, and medicinal qualities are assigned to the leaf-stalks.

Ancient as the knowledge of aquatics is, the adaptability of them for general culture is a recent acquirement. What is our native Nymphæa odorata, or common white pond lily, was introduced into England in 1786, although an English species, Nymphæa alba, was known there long before.

Many countries have their native lilies varying in color, size, and appearance. Nearly all have an aromatic, delicate, and pleasing odor. In some of the varieties, the flowers rest on the water, while in others they stand above it.

It may seem useless to some to go so far back into the past concerning the subject in hand, but the more we know of the history and native habitat of any plant the more we will be interested in ministering to its natural requirements.

In every advance movement in the world's history there is always some great leader who has a desire to better existing affairs, and to contribute to the world the results of his ambition. Thus was it true in a marked degree with Mons. B. Latour Marliac, the eminent French horticulturist; with an inborn desire for horticultural work he was a passionate admirer of all the beauties of the garden, and the flora of the waters was his favorite study. In 1879, he commenced his efforts in hybridization, which were not rewarded with success at the start, but later developments, based upon the lessons thus learned, brought forth successful results.

Nymphæa Marliacea Chromatella was one of his earliest achievements and is today the standard yellow variety. Our native Cape Cod Pond Lily, Nymphea odorata rosea, afforded him a rich source of pleasure in his hybridization efforts, for it became the progenitor of many valuable varieties. His happy and prolific experiments in the hybridizing of Nymphæa have given great pleasure to the horticultural world, who owe him a debt of gratitude for these additions to our hardy garden flora, which have both the large and noble forms and the soft and lovely flowers of the Tropical Water Lilies.

Among those who have been instrumental in improving lilies and popularizing water gardening in our own country, mention should be made of Mr. Sturtevant of Bordentown, New Jersey, who has been styled the Father of Water Lily Culture in America. A superb variety with bright, rosy red flowers bears his name. In 1839, R. Buist began his devotion to lily culture and was another pioneer. Not until 1883 did water gardening gain any prominence. In 1886 it began to be a feature in the Philadelphia Parks. In 1888, Mr. Goodell of Dwight, Mass., exhibited aquatic flowers at the Massachusetts Horticultural Society rooms in Boston which excited enthusiasm. Mr. S. C. Nash of Clifton, N. J., transformed four acres that produced a rank growth of weeds, muskrats, and mosquitoes into a pond of marvellous beauty, rich in its flora of water plants. The names of Tricker, Gray, Bryden, Blomberg and others might be enumerated as contributing their share in the advancement of "Water Gardening."

If we are fortunate enough to have a natural pond its location is made and it falls upon us to develop nature, but if we have to construct a pond then it becomes our duty to imitate nature. The ideal spot is one sheltered from the cold winds, having a bank on the north side that can be appropriately planted and trees in the background. If our location is on a level plot then we must produce the above effect by planting.

A location for a pond must be secured where the sun will shine on it the greater part of the day. The water must be available and controllable so that the height of it can be raised or lowered at pleasure. If it should be a stream with a strong current a way would have to be provided for the water to run after the pond was full. Water containing salt, lime or iron is not suitable to grow plants in.

The water should not be changed often for it reduces the temperature and in still waters plants receive more available plant food from decomposing insects and organic matter. When it becomes necessary for any cause to change the water while the lilies are in the pond, it should be done on a cloudy day. At first the water should be but six inches deep, it being

shallow it will heat rapidly, but as the plants grow the depth of water should be gradually increased until 18 inches is reached, for some varieties require this amount while others need but a foot.

It is a curious fact that whatever may be the depth of water, the leaves will float and the stems seem to be just the right length, be it six or sixteen inches. In a natural pond a clay bottom is desirable and the soil necessary to grow the plants in should be very rich. If it is to be made it should consist of good turfy loam two parts and old cow manure one part. If the latter is not available sheep manure may be substituted; but instead of the above proportion it should be one of the sheep manure to six or eight parts loam.

Bone flour can be used in addition, a four or five inch potful to a vigorous growing variety and less for smaller ones. It is generally conceded that more flowers are obtained from Lilies by planting them in large boxes or one-half barrels and then placing them in the pond so that the proper height of water will be above them, than by planting them out in the bottom of the pond.

The strong growing varieties of lilies require about six cubic feet of soil, the moderate ones about three cubic feet, while the Nelumbium or Lotus requires about twelve cubic feet per plant. In order to keep the water clear in the pond it is necessary to put two inches of coarse sand or gravel over the surface of the soil.

To make an artificial pond, the shape should be the most natural for the position it occupies. If it can have receding bays and jutting rocky points so much the better. Mr. Olmstead, in an address delivered last summer on the purposes of a park, said, "The water surfaces of a park need more study and care to make them appear natural in outline as to their margins than do the ground surfaces of a park."

Having decided on the shape, it should be staked out and excavated so as to be three feet deep in the centre when done, running up towards the shore, where one foot will be deep enough. The shape will give various depths as required by dif-

ferent plants and allow for eighteen inches of soil in the centre to four inches at the edge. In many soils the bottom can be puddled with clay, which should be thoroughly mixed with water and pounded into place. It will require masonry in some form at the edge, either small stones or bricks laid in cement mortar for a depth sufficient to be secure from frost.

Another method is to place a lot of small stones at the bottom of the pond and extend out as far as the sides, laying the top course in cement mortar, and laying a brick wall one foot high and eight inches thick on the stones at the edge, then all of the surface treated with a coat of Portland cement. A drain should be laid under the brick wall and connected with the sewer or some similar outlet, then no water will remain under the wall and no danger from frost will ensue. Proper attention should be paid both to an inlet and outlet pipe, the latter connecting with the drain under the wall. A pond so constructed will rarely if ever need any repairs.

The whole surface of a pond should not be covered with lilies. If the pond is large, the centre should be kept open and the planting done more at the sides, producing the effect of continuous growth from the border of the pond, and in a measure obliterating the outline of the pond in at least a portion of the way. Walks should be near enough the border to permit the visitor to get a near view of the lilies to fully appreciate their beauty and fragrance. Seats should be so placed that different views can be obtained.

To raise lilies from seed is a very fascinating work. Seed should be sown in February and March in pots of soil with a one-eighth inch covering of sand and placed in a pan of water deep enough to allow the water to stand two or three inches over the pots. The water should be kept at a temperature of at least seventy-five degrees and the seeds will germinate in two or three weeks according to the variety. When the seedlings have made two or three leaves they will require transplanting just as other plants do.

When this operation is done in the water, the roots spread out better and can be easily placed in the pots they are to

occupy. When of sufficient size, pot singly in two and one-half inch pots, then later repot into four inch, not allowing them at any time to become stunted. They will require greenhouse or hot-bed protection until planted out doors in June. All varieties of lilies do not produce seed. Nature therefore resorts to other methods for reproduction. The hardy ones of this class are propagated by dividing the roots as the new growths start in the spring.

The tropical sorts of this class produce side shoots which form tubers at the end of the season's growth. On the approach of frost the roots are taken inside, the foliage trimmed back allowing the tubers to remain on the main root packed in moist sand under the greenhouse benches and kept at a temperature of sixty degrees. In the spring these tubers can be potted and grown until time for planting in the pond, but my advice would be to let somebody else try to winter these tender varieties, as about the only thing you can depend on is that they will rot. Young plants are easily obtained in the spring from men who have facilities for wintering stock plants, and they offer them at a much lower figure than it costs individuals to care for them.

Among all aquatics the Victoria is truly queen, and although it may not become our lot to cultivate it no address on Water Gardening would be complete without considering her majesty. It is a native of South America and was discovered by a traveller nearly a century ago, called there water maize. It is a plant with gigantic leaves five to six feet across, with a flat broad rim five inches wide of a lighter green above and crimson beneath, with beautiful flowers changing from white to pink giving forth a sweet fragrance.

Seed was brought from Bolivia in 1846 in wet clay. The first flower was produced in England in 1849, which was presented to Her Majesty Queen Victoria, in whose honor the plant was named.

The peculiar formation of the leaf gives it great buoyancy, and leaves have been grown in St. Louis and many of the parks that would hold two hundred and fifty pounds weight. The flowers are from fifteen to eighteen inches in diameter, and they

last two nights. A variety from Brazil, called Randii, is of a more robust habit and better adapted to out-door culture. The flowers are white, changing to deep crimson. Mr. Sturtevant, of New Jersey, was probably the first to cultivate this variety here. Mr. Tricker, in 1894, procured a new variety which proves to possess greater blooming qualities than the preceding, and the originator claims that it is destined to supplant its predecessors and make the possibility of Victoria growing of no greater difficulty than that of the tender lilies. In its native country the variety is a perennial, but it is better treated here as an annual. It is propagated from seeds that are sown in February or March and flower the following July and August. It requires one hundred and fifty cubic feet of soil per plant, and the water should be two feet deep. In our climate, when grown out of doors, it is necessary to heat the water to ninety degrees in the early summer, and for this purpose a boiler is placed in a low situation and pipes are run through the pond. The boiler-house should be hidden by rocks, shrubbery and vines. It is also advisable to provide a glass covering until the weather is sufficiently warm. Great care is then needed in properly hardening them off. Victorias have been grown in this State by Mr. Goodell, at Dwight, near Amherst, without heat outside, by using sashes to cover his pond early in the season, and he has succeeded in having them bloom for nearly a month. Mr. Bryden, when he was at Yarmouthport, grew Victorias very successfully, and at one time had a plant which produced fourteen leaves and an abundance of flowers. The expenses incidental to its successful culture render it a plant not for the millions, but for those who have a million or more.

Among the aquatics, the Nelumbium or Lotus, in all its Oriental splendor, is a stately plant, and deserves a prominent position in the Water Garden unless it can be favored with a pond by itself. Lotus ponds are very common in Japan. It is valued by the Chinese, who highly appreciate it, for in North China it is cultivated in every available wet ditch, marsh or swamp. Its seeds and fleshy rhizomes are edible and highly esteemed in Chinese cookery. Its flowers are used for decora-

tive purposes, while its petioles and leaves are devoted to medicine. The Americans, however, are satisfied to use it for its decorative purposes, and in this it excels.

It is propagated by seeds and by the division of its roots. Seeds of the Nelumbium have grown after having been kept forty years, but one may not infer that they improve with age. Baron Von Müller tells us that the ancient Egyptian method of sowing was to enclose the seeds in balls of muddy clay and chaff, which were then sunk in the water where the plants were desired to grow. If the hard, outer coat of the seed is filed thin near the apex, it will germinate more readily. Seed planted in March, in pots in water, at a temperature of seventy degrees, will germinate in about ten days. When the plants are of sufficient size, they should be repotted and kept inside until June, when they can be planted outside in their permanent quarters. The seed may also be planted where the plants are expected to grow, and thus become naturalized. There are some examples of this method that have been very satisfactory. Raised from seed the plants will not flower until the second year, when one may expect a fine display of bloom. If plants are grown from the roots or tubers, flowers can be expected the first season. This method is doubtless best for amateurs. The time for dividing tubers is in the spring when growth begins; the conditions are then more favorable for active work, and little risk attends planting at that time, which will be about June first. When planted, they should be covered with six inches of soil. Once established, they grow with marvelous rapidity.

If planted in a pond with lilies, the roots should be confined by brick wall, as they are voracious feeders and will soon take possession both of soil and space. They attain greater perfection and beauty to occupy a pond alone and without restriction. They can, however, be grown very satisfactorily in tubs and half-hogsheads. They should be in a sheltered spot so that the wind will not destroy their flowers. It is claimed by some that sluggish streams or ponds with a fresh supply of water, either by stream or fountain, are better adapted to them. They should be protected in winter either with water of sufficient depth, or

if the water is drawn off, with a covering of leaves; in either method, enough to exclude frost. The flowers last three days, but unlike the Nymphæa or Water Lily, only partially close at night.

There are about twelve varieties of Lotus, but for amateur use the Speciosum and Roseum are the best. The Speciosum is the world famed Egyptian Lotus, also the Sacred Lotus of the Hindoos, and it is nearly as hardy as the native Water Lily. The flowers are rose-pink, of a brighter shade the first day. They do not fully expand until the second day, when they are at their best. This is a vigorous grower, and after being established, the leaves rise out of the water from two to three feet and the flowers stand up a little above the leaves. The Nelumbium Roseum does not grow as tall as the Speciosum; the flowers are of a deeper rose-pink, and more globular in form. Some cultivators have better success with this variety, but the former is generally considered easier to grow.

Among the other varieties is the Nelumbium Album Grandiflorum, which has pure white flowers that tower well above the stately foliage and contrast well with the bright-colored varieties. Then there is the Nelumbium album striatum, having a large flower with white petals tipped and striped rosy carmine, flowering very freely under liberal culture. It has the fragrance of a magnolia. The Nelumbium Shieoman is a recent introduction of Japanese origin, which claims to be a giant among Nelumbiums, with leaves thirty inches in diameter and stems five feet high. The flowers are white, double, and are produced freely. The Nelumbium Luteum is a native yellow variety and is common South and West.

The Water Lilies are perhaps the leading aquatics for general cultivators, and the sixty varieties which are grown are divided into two classes — the Hardy and the Tender. With proper treatment, the growth and blooming qualities of the Water Lilies are phenomenal; a small plant in the spring, from a three or four inch pot, will sometimes attain a size of from four to six feet in diameter, and will produce a large number of flowers. Instances are known where in the height of the season ten to

twenty flowers are out at one time on a single plant. Of course this means perfection in culture. Cleanliness is essential to secure success, and all flowers, as soon as they fade, as well as any yellow leaves, should be removed. The flowers close up and do not look very unlike the new buds. After you have had a little experience, however, you will easily detect the difference. In the fall, the hardy lilies should receive a natural method of covering,—either a supply of water which should be about eighteen inches deep, so that when ice forms they will not be likely to freeze; or if in an artificial pond, and it is desirable to draw off the water, they should be covered with leaves to an equal or greater depth. It has, however, been proven that some varieties will stand being frozen solid, and not be injured in the least. The hardy varieties can be planted in May, when we see the natural ones making their appearance.

Among the hardy varieties are the Nymphæa Alba Candidissima, Nymphæa Marliacæa Chromatella, Nymphæa Marliacæa Rosea. It is doubtful if a better trio could be named for amateur or professional culture than these three. They are strong growing, free flowering, large and beautiful. No finer variety can head the list than Nymphæa Alba Candidissima, which is now acknowledged to be the best hardy white. It has pure white, large flowers, and blooms from June until frost. Next to this is the Nymphæa Marliacæa Chromatella, having flowers of a canary yellow color with stamens of deep yellow. The leaves are bronzy green with chocolate red markings. It is similar to the preceding in habit. The Nymphæa Marliacæa Rosea is a vigorous grower. It has a deep rose-colored flower with free blooming qualities.

Additions in the new hardy varieties of lilies by the enthusiastic hybridizer are of annual occurrence and show an ever increasing improvement in the shape, size and color of the flowers, which bid fair to equal even the choicest products of the tropics.

In the tender class of lilies are the day-blooming species, whose flowers open early in the morning and close about the middle of the afternoon, and the night-blooming species, whose

flowers open late in the afternoon and close in the morning, although when the weather is cloudy they will remain open longer. The flowers of both species last three days.

As the season for the tender varieties is not of long duration, it is very important that good sized plants should be used when planting; but remember that they are natives of the tropics, and do not plant in the pond before June tenth, and quite frequently it is better to wait a week later. This is imperative. It is as important to have the nights warm as well as the days. If, in parks, electric lights are placed near the pond so that visitors can examine the night-blooming varieties in the evening, the pond will present as beautiful a picture as by day, with even a more fairylike appearance.

The following is a list of the most satisfactory varieties:—

DAY-BLOOMING.	NIGHT-BLOOMING.
Nymphæa Gracilis.	Nymphæa Dentata.
Nymphæa Zanzibarensis.	Nymphæa Devoniensis.
Nymphæa Zanzibarensis Azurea.	Nymphæa Columbiana.
Nymphæa Zanzibarensis Rosea.	
Nymphæa Pulcherrima.	

The Nymphæa Gracilis is a Mexican variety of great merit, being the only white day-blooming tropical variety in cultivation. The white flowers have stamens of rich golden yellow and are borne on stems ten or twelve inches above the water. Its fragrance is like the lily of the valley.

The family of Nymphæa Zanzibarensis is among the most easily cultivated of lilies, producing blooming plants in one hundred days from the planting of the seed. The purple variety has very large flowers and is one of the most beautiful and free flowering of all the water lilies. The other Zanzibar varieties, Azurea, of a lighter color than the preceding, and Rosea, which varies from a light to a deep rose, are easily grown and admirably adapted for tub culture. These two are perhaps the best tender varieties for the amateur to begin with and are inexpensive.

The Nymphæa Pulcherrima is said to surpass in vigor and

free flowering qualities all other varieties, with flowers ten inches in diameter of a beautiful light blue, with deep yellow stamens tipped with blue, and the sepals irregularly striped dark red. The flowers remain open more hours during the day than any other variety. The leaves are large. It is a hybrid of American origin.

The Nymphæa Dentata is the largest and best of the night blooming varieties, with long pointed buds and flowers of a pure paper white thrown well above the water. It blooms freely through the season and is a native of Sierra Leone.

The Nymphæa Devoniensis is a hybrid that was raised by the Duke of Devonshire. It is a free bloomer. Its flowers are of a brilliant rosy red and it makes one of the most gorgeous varieties in cultivation. They are very beautiful by artificial light, and are of large size.

The Nymphæa Columbiana is an introduction of American origin, having bright red flowers that deepen in color each succeeding day. This is an unusual feature in water lilies, as most of the colored sorts have a tendency to grow lighter.

There are many other aquatics that are worthy of a place in the water garden either on account of their graceful foliage or attractive flowers. They should be used, however, in limited quantities, giving the lilies the prominent places.

I shall by no means attempt to give you a complete list, but will confine myself to some of the most desirable. Among the tender plants are the Cyperus Alternifolius, or umbrella grass, which is desirable for edges and is also suitable for pot culture; the Cyperus Papyrus, the ancient Egyptian paper plant, which grows in water or marshy ground and is very valuable in the water garden. It has triangular stalks of from four to five feet in height, supporting at the top a cluster of narrow leaves. It is very effective near the edge in shallow water. It will also flourish and grow in soil with no more water than cannas require to make them do well. Then there is the Eichornia Azurea, or Blue Water Hyacinth, a native of Brazil, and a rapid grower, producing large spikes of lavender blue flowers with a dark blue centre. It branches freely and creeps about

on the surface of the water. Again, the Eichornia Crassipes major, or Water Hyacinth, is a floating plant which forms rosettes of curious leaves. The stems are swollen at the base and contain numerous air cells, causing the plant to float on the water. The flowers are rosy lilac and resemble a spike of the Dutch Hyacinth. The hyacinth should be planted in pots or tubs so that the roots will be confined, otherwise they will overrun everything. This water hyacinth grows and flowers floating on the water, but it will produce better flowers if the roots are in the soil.

As we see this plant growing in small numbers in our ponds or aquatic basins, it is difficult for us to imagine that in the sluggish streams of Florida it flourishes so luxuriantly as to block navigation. So serious a trouble has this become that the Department of Agriculture at Washington has sent an agent to investigate the matter. It has been suggested that to introduce a natural enemy might solve the problem, and the red spider has been considered. If it succeeded, however, it might be found that the remedy was worse than the disease, or perchance, the spider might not take to the water. I do not relate this about the Hyacinth to discourage anyone here, but to show of how easy culture it is under favorable circumstances. It is worthy a place in every collection.

The Limnocharis Humboldtii, or Water Poppy, is so called because of the resemblance of the flowers to the California Poppy. Its flowers are yellow with black stamens. The leaves are small and oval in shape, floating on the top of the water, and the plant grows with great rapidity. It soon begins to flower after planting, and continues until frost a mass of bloom.

Myriophyllum proserpinacoides, or Parrot's Feather, is a graceful, half-hardy aquatic with a feathery foliage, and if placed where it can hang in a fountain basin, produces a pretty sight.

The Sagittaria Japonica Floraplena, or Double-flowered Arrowhead, a hardy variety from Japan with arrowhead foliage and pure white flowers grown on a stalk. It resembles a giant ten weeks' stock, and prefers to be grown in shallow water.

The Zizania Aquatica, or Indian Rice, is an annual and very ornamental. Its graceful panicles are produced on stalks six to eight feet high.

Typha Latifolia, or Common Cat-tail, is too well known to need description, but is none the less effective. Do not allow this to get a very strong foothold if your pond is small, as it will soon monopolize the entire space. It is better to grow this on the border outside of the pond if you have an artificial one, and if kept well watered it will thrive and contribute its valued effect.

The Iris Kempferi, or Japanese Iris, can be planted on the edge of a pond or where it can be occasionally submerged. The flowers are from 6 to 10 inches in diameter and vary from pure white to royal purple in color. This Japanese Iris is one of the handsomest of the whole genus, and when in flower one of the handsomest of all garden perennials. It is beloved by the Japanese, who make holidays to visit the Iris beds when the plants are in flower; a sight which for delicacy of texture and beauty of color is unsurpassed. It is worthy of a place by itself, and ought to receive more attention in the parks and private estates than it does. It is sometimes called a sub-aquatic.

The Acorus Gramineus variegatus, or variegated Sweet Flag, has green and white striped leaves, and is capable of making an attractive feature.

The Lobelia Cardinalis, or Cardinal flower, prized for its most beautiful of all colors, thrives well near the edge of a pond.

There should be a suitable planting for a background on the north and northwest portion of the pond to protect the lilies from the cold winds. Native trees of graceful habits can be utilized for a little distance from the pond, with willows and grasses between and coming down to the water's edge. The following can be very successfully used in the adjacent border:

Arundo donax is a giant grass which grows to a height of ten or twelve feet, and makes noble clumps; also a variegated form of the same.

Various kinds of Bamboos are desirable.

Eulalia gracillima univittata is a very graceful plant. Its narrow long leaves having a silvery midrib.

Eulalia Japonica Variegata and Eulalia Japonica Zebrina are variegated forms, all having showy plumes in the late summer.

The hardy Ferns can fill many a shady nook and render an air of grace and beauty distinctly their own.

Pampas grass with its stately, silvery plumes is produced on stems six to eight feet high. This is not hardy here.

Pennisetum is a low-growing annual grass with silky plumes.

There are several tender foliage plants that can be successfully intermingled with the hardy sorts to add to the beauty and tropical effect of the surroundings.

The Banana with its stately foliage is always a valued acquisition.

The Ricinus, or Castor oil bean, is desirable in limited quantities.

The Cannas, if in your selection you pay more attention to the varieties that have vigorous foliage, are a great addition.

The Caladium Esculentum, sometimes called Elephant's Ear, is an admirable adjunct to the outside border, the surface of the leaves being not unlike the Lotus.

If the grounds are extensive—

Clethra Alnifolia (Sweet Pepper Bush),
Azalea Viscosa (Swamp Honeysuckle),
Ilex Verticellata (Black Alder or Winter Berry),
Kalmia Latifolia (Mountain Laurel),

are desirable for planting in low places.

The evening primrose with us last season, opening with the night-blooming lilies, offered quite a little attraction. Its individual flowers were very similar to the Water Poppy. This, of course, was grown in the outside border and with its stalks of light yellow blossoms produced a picturesque effect.

Some object to water gardens, fearing that they will produce a large crop of mosquitoes; but this need not prevent any one from having such gardens, as sunfish or goldfish in the water live upon the animalcule, and the mosquitoes no sooner appear than they are gobbled up. A drop or two of olive oil is some-

times put on the water to keep them out. In my experience I have never had any trouble from this source. Sunfish are apt to eat the young goldfish. The latter are generally used alone. They seem to be as hardy as the lilies and will remain in the pond during the winter months in darkness, or they can be removed to a cold greenhouse.

Frogs soon find their way into a pond, and do no harm, but turtles should never be allowed, as they destroy the young growth and flower buds of the lilies.

In the event of any Aphis coming on the lily buds or flower stems, water from the hose will soon dislodge them. It is not advisable to use insecticides; however, should occasion demand it, the Bordeaux mixture can be used, provided it is made one-third the strength that is used for ordinary plants. In the economy of nature there are several bugs that perform the duty of destroying insects.

The plants of the water garden would not be members of the vegetable kingdom if they did not have some enemies; but these need not prevent us from growing aquatics, for the result of our efforts will more than repay us for any labor we may bestow on them.

I trust that these fragmentary remarks will create in you a desire to give some attention to Water Gardening, for I believe it will afford you a great pleasure, and not you only but all who may be permitted to watch with interest your efforts.

It may be within the province of this Society to encourage the growing of aquatics by offering prizes for amateur displays, and thus add another feature to their interesting exhibitions.

Do not feel that you must possess a large tract to transform into tropical splendor, but take advantage of whatever facilities are within your reach, even if it be but two half-barrels sunk in the ground in the sunny corner of your garden, containing a lily plant in each with a few grasses back of them to make the lilies feel at home; and if your domain forbids this you certainly can enjoy a water Hyacinth, growing in a glass jar in your living room.

The following is taken from a report of the Park Commis-

sioners at Albany: "There is no feature in the floral display at Washington Park that has given such universal satisfaction as this aquatic plant display, and none that with ordinary care will more fully recompense the caretaker. It is a feature that is being introduced in every prominent park in the country, and a great many private estates of prominence." Thus you see that the possibilities of improving estates and parks that have existing water features is very great and it is an improvement that can be accomplished at no greater cost than is too often expended for far inferior results.

In addition to the aquatics, as I have before stated, the many water-side plants which seem to thrive only in these favored localities contribute even greater beauty to the scene. For, with the flora of the waters, this luxuriant growth of the swampy banks unites with the majestic growth of trees in the background, and produces a picture that for grandeur surpasses in beauty any formal attempt at gardening.

3d March, A. D. 1898.

ESSAY

BY

MR. LATHE, WORCESTER, MASS.

Theme:—Travels in the South.

PHILADELPHIA is the third city in population in the United States. The city hall is the largest in this country. It is nearly 500 feet square, has 14 acres of flooring, and 720 rooms, including the rooms in the basement. The tower is 500 feet high. William Penn stands on top of the tower in bronze, 37½ feet high, weighing 20,000 pounds, making the total height, 537½ feet. The cost was $20,000,000. Worcester city hall is 85 feet wide, 217 feet long, and the tower is 200 feet high.

The next wonder in this city is Wanamaker's store. It has thirteen acres of flooring, fifty departments under one roof and all entirely separate. The restaurant will seat over eight hundred people. Over 3,000 are fed daily. Christmas week over seven and one-half tons of candy were sold. There is a sitting-room and a reading-room for men and women. You can spend the day at the store in trading, reading and visiting, and you can get a lunch or a good square meal. It takes twenty-three tons of coal a day to warm, light, and run the thirteen elevators. it takes one hundred and twenty horses and sixty delivery wagons to deliver the goods and to haul the goods from the depot to the store. Quite a good many old people go to the store, where they read, visit, tell stories, and have a good time generally. More than seven miles of two and one-fourth inch pneumatic tubing, reaching to eighty-one pay stations in many

parts of the store converge at one point, where twenty-nine cashiers are required to attend to the business they bring. More than three acres of flooring are covered with samples of furniture. In one day nine hundred chairs were sold. Thirty-five hundred people are employed in the store, a city under one roof.

Next comes Wanamaker's Sunday-school. The object is: To teach the word of God; to lead souls to Christ; to build up Christian character; to encourage and assist Christian workers; to train everyone to usefulness. In 1858, Mr. Wanamaker held his first Sunday-school. He had twenty-six scholars and two teachers. Now he has an average attendance of twenty-five hundred scholars and one hundred teachers. The building was enlarged last year one-third its original size. The orchestra is composed of twenty-three pieces. The first half hour is devoted to the opening exercises. Six or seven pieces are sung and the singing is very fine.

One of the attractions at Wanamaker's store was a vegetable wedding. The bride and groom were the cucumber and tomato; the notary was horseradish; the mother-in-law was cauliflower; the witnesses were leek and asparagus; the invited guests were celery and carrot; the musicians were the black beans and peas; the magistrate was cabbage.

Baltimore. I was there on the nineteenth day of April just thirty-three years after the riot. I went out on the street where the riot took place. At the time of the riot a train of cars could not cross the city, so the cars had to be hauled through by horses. On Pratt Street the mob became so enraged that they tore up the track, and then the soldiers had to march. It was while they were marching that the mob threw stones and bricks and killed two of them and wounded several. It was now the soldiers' turn. They were ordered to fire, and the result was that some seven or eight of the mob were killed. This closed the affair. It was the Massachusetts Sixth from Lowell, Mass.

Richmond, Virginia, is a city set on hills. The colored people of this city have the finest colored church in the South. It cost $40,000, and was paid for by the colored people. One

white man gave the chandeliers, which cost $500. The colored people have their churches, Sunday-schools, and day schools, all through the South, entirely by themselves. They have teachers and ministers of their own color. There is one thing about the colored people, they are a church-going people, and they bring up their children to go to Sunday-school. They have a large church membership, mostly Methodists and Baptists. Jefferson Davis made this city his headquarters during the rebellion. The house he occupied is now used for a graded school. He attended Saint Paul's Church and was in church when the news came that Lee had surrendered (it was half past ten Sunday morning.) The news was not unexpected. He had but a short time to give his orders, pick up his traps, and leave the city. His orders were to destroy all the liquor and tobacco, and set fire to the city.

I visited a Confederate cemetery. Nothing is left to mark the spot but the Pyramid, which is built of rough stone fifty feet square on the ground and runs to a point ninety feet high.

Had it not been for the Tredegar Iron Works the South could not have held out as long as it did. These are on the James river below the falls. The James river is not navigable above Richmond.

Jefferson Davis was determined that the Yankees should not have any of his rum or tobacco, and the first thing our army had to do when they got to Richmond was to fight fire. The city is now built up, and is a nice, healthy place. The air is pure and the water good, and the climate splendid. The State House is on very high land, and from the tower a fine view of the city, country and the James River can be seen. The park where the State House stands contains four acres. There are some fine pieces of statuary here, a statue of Stonewall Jackson, upon which is written, "erected by Englishmen," among other things. There is a beautiful spring of water in the park. There are a lot of tame squirrels in the shade trees and if you sit down to eat peanuts, you will have plenty of squirrels to help you. There is a fine of five dollars for killing one of these squirrels,

and the same fine for killing a turkey-buzzard anywhere in the South.

Athens, East Tennesse, is a city of four thousand inhabitants. It is located between Chattanooga and Knoxville. The country is mountainous and hilly, and numerous springs of water flow from the hills. The waste water from some of the springs would fill a six-inch pipe. The climate is mild and very healthy. There is a jean factory, a thread factory and chair factory in the place. The State abounds in timber, marble, coal and iron. All that is wanting is capital and brains to utilize it.

The Grant University is located here and is in a flourishing condition. The jean-clad, log-cabin mountaineers are a sight to behold. There are so many patches on their clothes that it is hard to tell what the original was. Some of them hardly ever get out of sight of their cabin. They are a very ignorant class of people.

I went out to Mouse creek to see some of the old slave plantations and found the proprietor of one of them living. He was very willing to talk, said he was eighty-four years old, and that slavery was a curse to the South from the fact that slaveholders' children were not brought up to work, and when the slaves were liberated he owned fifty and was glad when they were gone. Said he could hire a nigger cheaper than he could own one. His son was carrying on the plantation and raising fine crops. Other plantations near him equally as good as his had not been cultivated since the war. The land had grown up to sage grass and they were hunting rabbits in it.

I found some very nice dairy farms. I went to one farm where the waste water from the spring was utilized to do the churning. He had a silo, but he let the air get to it and it was spoilt, you could smell it a long distance from the barn.

Court week is a great week in Athens, everyone comes to town on horseback, some on law business and some to trade horses. The county owns some four or five acres of land that is used for a trading ground. It is all covered with hitching-posts free for everyone. The cry is, "How will you swap?" or "How will

you trade?" One thousand horses can be seen in Court week all wearing saddles on their backs. It is much safer on horseback than in a wagon, as the roads are bad.

Salisbury, North Carolina is a city of four thousand inhabitants. They have nine churches, four for the colored people and five for the white people. The colored people have a Normal school and a graded school, and draw as much money per scholar as the white children do. I think the colored children are fully equal to the white children in learning and far ahead in behavior. When I was in the graded white school, I noticed a bunch of sticks, and very soon one of the teachers from another room came in to borrow some sticks; he said he had used up what he had. When I was in the colored school no sticks were needed, and I was surprised to see how quick the scholars would put an example on the blackboard and explain it. Their recitations both in the day and Sunday schools were very prompt. The little ones not more than four or five years old had a short verse of scripture, which they would recite as quick as their turn came. I attended the Methodist Church most of the time I was there. The Sabbath-school was in a very prosperous condition, and the class that got the largest collection was a banner class. The class that had the most perfect lessons was a banner class also. The organist was a young lady from Amherst, Mass. The people are very sociable, hospitable and entertaining. An invitation to tea is "I want you to come to break bread with us."

The city is nicely laid out in square blocks. The well-to-do people take a whole block for a house lot. They have fine large shade trees and their surroundings are very pleasant. The streets and roads are not repaired and are in bad condition and there is no pleasure driving. The soil is red and in the winter is very muddy and sticky. Where the principal street crosses Main street there is in the centre a well with a large wooden log pump. This is public property and here is where people gather when they come to town, every Saturday afternoon. One man came riding an ox. When asked what he did with him he said he made ten barrels of corn with him.

The native whites and blacks of North Carolina are to be pitied,

they are too shiftless to get a living, they cannot get credit at the stores; so if they have any property they have to mortgage it, including their tobacco crop to the merchant. Then they can get trusted. The tobacco is brought to market and sold at auction and the merchant takes the pay.

The roads are so muddy that half a cord of wood is as much as two horses can draw to market. It brings from seventy-five to ninety cents per load. Chickens that, dressed, weigh four pounds, bring twenty-five cents each. Eggs bring twelve cents per dozen, and other things in the same proportion. The land is worn out and will not produce crops unless fertilized. It takes five acres to raise what one ought to raise. Grass will not grow on the plowed land. Some people who keep a cow can raise a patch of clover. The creek lands will raise quite good crops without putting in any manure, one stalk on a hill.

Salisbury is noted for its prison pen, some call it the stockade. It was where the Union soldiers were put who were taken prisoners. This prison pen has about five acres of land with a few old wooden buildings on it, not enough to shelter one-half of the prisoners, enclosed with a board fence. It was within this enclosure that eleven thousand seven hundred Union soldiers died from exposure and starvation during the war. Some of them were found with a death-grip on a corn dodger. They were buried near by in deep trenches. A granite monument marks the spot. The grounds comprise six acres, and are enclosed with a nice cemented wall five feet high. The Government keeps a man to care for the grounds, and every visitor is asked to register his name. I found some names from this county and I found seven marble slabs with inscriptions on them lying on the ground above the dead bodies.

Some fifty odd years ago, a wealthy man died in the city of Philadelphia, by the name of Stephen Girard. He was born in France. When he was a young boy he met with two great losses. His first was the death of his dear mother. Then while he and some boys were having a bonfire, one of the boys threw some wet oyster shells in the fire and a sharp piece of the shell struck Stephen in the eye and he lost the sight of it. So with one eye

he started out to make his fortune. He learned the ship-carpenter's trade, then he built a ship for himself and started out as a merchant and mariner on the high seas. He would go to one section of the world to load up, and then go to another place to sell. At one time in his life he had many ships afloat on the high seas. He prospered and accumulated a large fortune, and when old age overtook him he sold out and came to Philadelphia to spend the remainder of his life. About the first thing he did was to make a will; he gave to his help who had grown old in his service an annuity to be paid quarterly during their lifetime, and he gave large sums to benevolent objects. He made all of his relatives well off so far as this world's goods were concerned, and then he gave to the State of Pennsylvania $300,000, and to the city of Philadelphia $500,000. The remainder of his property he gave to the city of Philadelphia to found a college for the training and educating of the orphan poor boys of the city of Philadelphia and of the State of Pennsylvania. The grounds consist of forty-five acres of land enclosed in a nice cemented wall ten feet high. The gatehouse is on the east, and everyone has to go through it to get into the college grounds. A stranger has to get a permit to go in.

This forty-five acres is about five times as long as it is wide. An avenue goes through the centre of the lot. The college is on the east end and buildings are on both sides of the avenue, including a very large power house. Here is where the boys learn the trades. They get not only an education but a trade as well. The college is a marble building with a marble roof, from which a fine view of the city and country can be obtained. There are thirty-seven marble pillars that hold up the roof that covers the piazza on both sides and at one end. The playground is in the rear of the college. The chapel is near the centre of the grounds. The boys march from the college to the chapel every day at nine o'clock and four o'clock for religious instruction. The chaplain reads the prayer and scriptures and the boys do the singing. It would surprise you to see one thousand boys between the ages of ten and eighteen marching from the college under military discipline. They enter the chapel in companies, every boy gets

a seat as quick as possible and the room is very quiet. In pleasant weather, every Friday after prayers, two hundred of the boys dressed in uniform, each boy carrying a gun, march to the playground, where they have a band of music, and where they go through a drill in which they do themselves great credit.

All boys under ten years of age have their meals in another building, and it would do you good to see those little boys take their places at the table. They fold their hands and do not stir until the blessing has been said and they have been helped. There are over five hundred boys. Each boy has his wash-dish, towel, soap, comb and brush, and he has to put them in their place. The same is true of all his clothes. When these boys graduate they have three suits of clothes and no bad habits, such as drinking, smoking and using bad language. They are taught to mind on the instant when spoken to. They graduate when sixteen or eighteen years old, and their services are in demand. Temperance young men are always in demand, and always will be. This college was opened January 1, 1848, with one hundred boys. Since the opening of the school, five thousand seven hundred boys have been clothed, fed and educated, and a great many of them have learned a trade.

There were, one year ago, 1,536 boys at the college. The trustees are preparing to take in more boys, as there is money enough to care for them, as soon as suitable buildings can be built. The cadets, two hundred in number, go out to Island Heights, New Jersey, for a summer encampment which lasts three weeks. The drills they go through with do them great credit, and large crowds gather to witness their drills.

When the yellow fever was in Philadelphia, Mr. Girard procured a pesthouse and took care of the sick himself, and he never lost a patient. At one time he saved the city from bankruptcy by lending them money, and he also helped the Government by lending them money.

There has been some fault found with Mr. Girard because he would not let clergymen into the college. I will give you his exact words in relation to it. "I enjoin and require that no ecclesiastic, missionary or minister of any sect whatsoever, shall

ever hold or exercise any station or duty whatever in said college; nor shall any such person ever be admitted for any purpose, or as a visitor within the premises appropriated to the purposes of the said college. In making this restriction, I do not mean to cast any reflection upon any sects. There is such a diversity of opinion amongst them I desire to keep the tender minds of the orphans, who are to derive advantage from this bequest, free from excitement, which clashing doctrines and sectarian controversy are so apt to produce. My desire is that all the instructors and teachers in the college shall take pains to instill into the minds of the scholars the purest principles of morality. So that on their entrance into active life they may from inclination and habit, evince benevolence towards their fellow creatures and a love of truth, sobriety and industry, adopting at the same time such religious tenets as their natural reason may enable them to prefer."

10th March, A. D. 1898.

ESSAY

BY

PROFESSOR JOHN W. CLARK, NORTH HADLEY, MASS.

Theme: The Outlook for Profitable Fruit Growing in Massachusetts.

IN the early history of our State the planting of fruits was simply for home use; commercial orchards were not thought of.

The varieties planted were those brought from the mother country, and trees grown from seed without being grafted.

In most cases the varieties brought from the mother country proved unsatisfactory, and were replaced by the best of the many seedlings that had sprung up among the colonies. This was more especially true of the apple. In the earlier days of the colonies, and for some time after, one of the chief uses made of the apple was the production of cider and its products.

In the fourth report of the Massachusetts State Board of Agriculture (that of 1841) this statement is found in regard to apple orchards: "Fruit is cultivated in the country at large to a comparatively small extent, and since the progress of the temperance reformation throughout the country, cider has fallen into almost entire disuse. Apple orchards are neglected, and young orchards are not planted as frequently as formerly." This made the orchards composed of seedling trees bearing their natural fruit of little value, and, being left to care for themselves, they gradually died out, and for some time few apple orchards of any great extent were planted; but, as the State increased in wealth and population, more and better fruits were called for, and this caused a revival in the planting of

fruits, which, with periods of depression and renewed interest, we can follow down to the present time.

This is not only true of our own State, but of the whole country. Special fruits have been found to be especially adapted to the soil and climate of different sections, and in many instances the production of this special fruit or fruits has become the chief industry.

It was only a few years ago that our markets were supplied with nearly all of its fruit from the surrounding country, little being received from outside the State; but as railroads began to multiply and the cost of transportation to cheapen, fruits from other sections began to be seen in our markets, and as the science of handling, packing and shipping fruits became better understood, the distance of shipments increased, so that to-day we have to compete in our markets with grapes, peaches, pears and plums from California, peaches from Georgia, grapes from Ohio, apples and grapes from New York, and apples from Michigan, Missouri and Nova Scotia, to say nothing of the immense quantity of oranges shipped from California and Florida.

Although the orange is not grown by us in Massachusetts, it probably affects the market price of our apples more than all of the other tropical and semi-tropical fruits put together, and it will continue to do so.

Before the day of rapid transit and shipping of fruits in specially constructed cars, and the introduction of cold storage, it often happened that a partial failure of the crop in one section caused a corresponding scarcity in the markets of that section, and prices advanced to a point that was out of the reach of all but the wealthy. Today this does not happen for any length of time.

Our country extends over such a range of territory and has such a varied climate that the general failure of a crop in the temperate portion of our country is an unheard of occurrence. A shortage in one part is soon made good from other sections. In making an estimate as to the price of any of our fruits, we must take into account the crop of the whole country, for, as

soon as the price warrants it, a shortage will be made good from somewhere, and this, with cold storage to carry fruits over a longer period of time, prices in the future will not show such extremes of variation, but will be more uniform.

Much has been said and written in regard to the barrenness of our soil and the severity of our climate, preventing us from growing many of the choicer kinds of fruits.

This may be true to a certain extent. Still, we need not get discouraged, for, from what I have seen and been able to learn, I am convinced that those who have suitable lands, favorably located, can, with proper care and business capacity, make the growing of fruits as profitable in Massachusetts as in any other part of our country.

We hear many flattering reports of the fruits grown in different parts of our country—the quantity of fruit produced, the ease with which it is grown, and the money that can be made in California, Florida and Georgia in growing fruit. This may look well on paper, but when the plain facts are known the low price which the fruit brings if sold to local dealers, and the unsatisfactory returns received when the fruit is shipped on commission to northern and eastern markets, it is evident we have no need to envy our southern and western competitors. We should always bear in mind that the nearer we are to markets where the population is a consuming rather than a producing population, the better will be the prices obtained for our products.

We may not be able to grow fruit with as little care and expense as in some of the newer parts of our country; where everybody can grow with little expense a certain fruit, the price of that fruit is correspondingly low, for every one wants to sell and no one wishes to buy.

We have here in Massachusetts the advantage over any other portion of our land, in that we have the best markets that the country affords at our very doors, and our population is a consuming and not a producing one.

Of all the fruits grown in Massachusetts, the apple stands first, and not only is it first with us, but of the fruits of the tem-

perate zone the apple is the most important, and notwithstanding what has been said about our soil and climate, Massachusetts Baldwins, Greenings and Roxbury Russets stand first in the markets as to quality and size, and usually lead in price. Although Maine, New Hampshire and Vermont may have varieties that are of better flavor, and will keep longer, their Baldwins, Greenings and Roxbury Russets are smaller in size, and, as a rule, sell for less money.

If we can grow better Baldwins, Greenings and Roxbury Russets, and get better prices for them than they can in other sections, we may be well satisfied, so far as the production of apples is concerned.

Massachusetts has hundreds and thousands of acres of land well adapted to the growing of apples and other fruits that today is made of little use. If this land could be planted to fruits by the right individuals, the income derived from it would be increased, and, instead of growing less year by year (as farm property throughout this and other States has for the past twenty years), its value would be increased.

There is a town in this State where the assessed value of farm property, with but one single exception, is less than it was twenty years ago. This land was planted to fruits, and instead of being assessed the same or less than it was twenty years ago, it is assessed four times what it was then, and the assessors say "it is not now assessed one-half what it is worth." Here is an instance where Massachusetts farm property has not decreased in value, and there can and should be hundreds of similar cases scattered over the State.

It may be said if apples are planted extensively the markets will be overstocked and prices will drop to such a figure that there will be no profit to the grower. It is just here that a revolution must come in the marketing of all our fruits. It is not the quantity of choice fruit, well handled and packed, placed on the market, that breaks the price, but the inferior fruit or good fruit improperly handled that gluts the markets.

This poor fruit forced on the market must be disposed of for what it will bring, and this prevents the sale of good fruit, un-

less one is willing to sell for a correspondingly low price. Every barrel of inferior apples sold practically prevents the sale of a barrel of choice fruit, and every barrel of apples sold that is improperly handled or dishonestly sorted and packed causes the purchaser to lose confidence, and he is unwilling to pay as much as he would if he was sure every time of getting a barrel of apples honestly packed.

There is not too much good fruit sent to market, but too much inferior fruit, for which some other use should be made. It is not from those who take good care of their orchards that the bulk of the improperly packed and inferior fruit comes, but from the average farmer, who either does not know how or will not take the trouble to care for his trees or handle the fruit as it should be.

The time has passed when apples can be grown and made to pay under snch treatment, and the sooner the average farmer goes out of the fruit business the better off will he be.

These orchards have not paid in the past, and the chances are that they will pay less in the future as competition increases and the markets call for better fruit.

The fruit business is following in the line of other industries, and is becoming a business of itself. More are making fruit growing a specialty than in the past. More orchards containing thousands and tens of thousands of trees have been planted by single individuals or stock companies during the past fifteen years than ever before, and this extensive planting it still going on. It is only about ten or twelve years since California first began to ship fruit to our markets to any considerable extent, and but about fifteen years since the exporting of apples to Europe began to be an important factor in the handling of the apple crop.

How important a bearing the exporting of apples has upon the home markets can be known when we realize that during the season of 1896 and '97 nearly 3,000,000 barrels of apples were shipped to Europe. If we should look through our list of fruits we shall find that commercial fruit growing has nearly all sprung

up since the close of the Civil War, and the greater portion of it within the past twenty years.

The peach has attracted considerable attention during the past few years, and many large orchards have been planted. Some have proved a success, others have proved a failure.

This has been the history of peach growing in this State. In looking over the reports of the Massachusetts State Board of Agriculture of fifty or more years ago I find this statement is made: "Peaches do not do as well as they did fifty years previous, and the greatest success is obtained where trees are planted on high ground."

This is no less true today than it was one hundred or more years ago, and the site selected for the growing of peaches should be land higher than that of the surrounding country, having a good circulation of air, where the fruit buds will be less liable to be killed during the winter.

Still there is no certainty that the buds will not be injured in Massachusetts even when the trees are planted in the most favorable situations. During the past seventeen years peach trees with me have given good crops in 1883, '89, '93, '95 and '97, and partial crops in 1887, '88, '91 and '94, making five good crops and four partial crops. I do not think it wise to reckon on over two full crops of fruit during the life of a peach tree here in Massachusetts. At least in my locality the price of home-grown peaches is not what it used to be, the price of the '95 and '97 crops being very low. There will probably never come a time when all the home-grown peaches, if well grown, will not find a market at a price above that of southern peaches, on account of their better flavor, color and less waste.

With small fruits the markets of the future will be supplied with its best fruit from local sources, and those who grow the best fruit will sell their products at a profit, while the grower of inferior fruit will be compelled to sell at a loss.

In the growing of fruits it is the same as in other kinds of business. More depends on the man than on the business, and if one has not a liking for fruit growing and is willing to take for his motto and live up to it, "Eternal vigilance is the price

of success," he had better never undertake it, but if one has a love for the business, and the necessary stick-to, push and energy, I for one can see no reason why the growing of fruits cannot still be made as profitable in this as in any other State in the Union.

ANNUAL REUNION AND SOCIAL GATHERING.

MARCH 9, 1898.

An informal reception for members and invited guests was held in the hall and adjoining rooms from six until seven P. M. The company then marched to the banquet hall, Bicknell's orchestra playing a march. After prayer by Rev. George W. Kent, supper was served by Curtis S. Yeaw.

At the guests' table were Mayor Dodge, Gen. F. H. Appleton, Pres. of Massachusetts Horticultural Society, Gen. Henry W. Wilson, George Cruikshanks, Pres. of Massachusetts Fruit Growers Association, Prof. John W. Clarke, Prof. S. T. Maynard of Amherst Agricultural College, Prof. L. F. Kinney of R. I. Agricultural College, Dr. C. F. Hodge of Clark University, C. F. Carroll, Supt. of Schools, H. P. Lewis, Prin. of English High School, E. P. Goodwin, Prin. of Classical High School, Hon. Stephen Salisbury, F. L. Hutchins, Pres. O. B. Hadwen, Secy. A. A. Hixon, and Toast-master Hon. Henry L. Parker. After spending an hour enjoying the feast, President Hadwen called the company to order.

WELCOME BY PRESIDENT HADWEN.

Ladies and Gentlemen:—

Again it becomes my privilege to extend to you a cordial and hearty welcome. The recurrence of another year, the fifty-sixth anniversary of our Society, brings together our members and their friends in social intercourse; as we look around and behold so many well remembered countenances and listen to the friendly cheers greeting each to the other, and every one who addresses you, I may well congratulate the Society on the liberal and increasing interest of the community so manifest in all our entertainments and exhibitions; in the continued improvement

in the flowers, fruits and vegetables exhibited during the past year, with the advance so notable with each recurring season.

Horticulture is the one pursuit in natural science in which all, without regard to age or condition in life or degree of education and refinement, unite. It presents a common field where every degree of taste and refinement may find an extended opportunity to pursue a course of culture, suited to the ambition and tastes of each and every one. He finds here no obstruction in the pursuit most conducive to his talents, but tending to encourage a course which attracts and delights all, whose enterprise is directed to improve and broaden the horticulture of the county.

Each successive year shows a marked and gratifying progress in the beautiful belt of towns in our county which surrounds and clasps our city like a "jewelled zone." Ornamented grounds and gardens are yearly encroaching upon uncultivated fields and wooded places; tasteful dwellings are seen within the plantings and groupings of coniferous and deciduous trees, with their exquisite foliage sheen, which gives them such attractiveness and quiet beauty, whose roofs shelter the manly and gentle virtues that are nurtured in refining homes; and the intelligence and influence that are generated around these hearthstones are the lineal descendants that contribute to the useful pursuits of life. I feel that we are reaping no scanty harvest for the good seed sown by the men of noble deeds, the founders of this Society. I feel that the Society is especially making itself manifest in this work by its encouragement of those refining rural tastes and the virtues which are its allies, contributing to make people happier and better.

I feel that this Society is doing well its legitimate work by diffusing and encouraging a wholesome taste for those simple and rural pleasures which add to and prolong the lives and happiness of its members. It teaches our contributors the art of careful selection of fruits in size, color and form, and the same may be said in the selection of vegetables; and is even more advanced in the cultivation and selection, in the display, of flowers, with the artistic blending of colors. It has taught the community the principal essentials in the cultivation of the soil to ensure the

best results. It has contributed the essentials of good and wholesome living, both to those who cultivate the soil and to those who consume the products of horticulture, and it is contributing its full share to the amenities of life ; its scope broadens with the advance of each season ; new fruits, new flowers and new vegetables are brought out, new shrubs and plants are introduced, new trees, both deciduous and coniferous, are freely planted in parks and private grounds, each and all contributing its full share in the aggregate to the higher and finer art of horticulture.

We may also congratulate ourselves that our lives were cast in pleasant places, and within this our goodly heritage we can appreciate the advantages we derive from the object lessons of our exhibitions, and the education and refinement derived from the essays and discussions at the sessions of the winter meetings.

Every tree, whose leafy boughs catch the morning light and waves its graceful head with every breeze, is a practical work of horticulture ; and every flower that opens its tiny bud to drink the dew of the morning,—each forms a part of the wondrous work, where nature is assisted by man.

With grateful memory we recall all who have contributed by their wealth, their wisdom, their untiring devotion and enterprise in building the Society up to its present standing among similar societies of the country. If we have nurtured the important work of disseminating information on the higher art and pursuit of horticulture, our labors have not been in vain. If we succeed in awakening an interest or the latent love of the cultivation of fruits and flowers and implanting it in the minds of the young who are to become our successors, we may feel that we contribute to horticulture, the most pleasing of all arts, and have fully kept pace with the rapid progress of the age.

When the returning season fills us anew with its promised hopes we again renew the seed planting in the garden soil. Nourished by sunshine and showers they soon send forth the germ of life with a vital energy. It starts into being with all their varying aspects. Such experience fully illustrates the lines of Wordsworth—

"Nature never did betray
The heart that loved her; 't is her privilege
Through all the years of this our life, to lead
From Joy to Joy; for she can so inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thought, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Shall e'er prevail against us, or disturb
Our cheerful faith, that all which we behold
Is full of blessings."

I have thus, my friends, briefly endeavored to break the ice, let me hope not entirely inconsistent with the spirit and purpose of the occasion.

"God Almighty," says Lord Bacon, "first planted a garden;" and indeed it is the purest of human pleasures, it is the greatest refreshment to the spirits of man; without which buildings and palaces are but gross handiwork!

But I must not prolong my remarks. There are others to speak to whom you will all be delighted to listen.

I now have the pleasure of introducing our honored friend and ex-president, Henry L. Parker, who will act as toastmaster for the occasion.

ADDRESS OF HENRY L. PARKER.

Mr. President, Fellow-Members, Ladies and Gentlemen:—

In the midst of warlike rumors, preparations for war, and all the excitement dependent thereon, this is eminently a peaceful assembly. We do not want war, but in view of the recent action of Congress, appropriating fifty millions to be used by the President at his discretion, we may well say as John Bull once said, "We don't want to fight, but by jingo, if we do, we 've got the ships, we 've got the men, and we 've got the money too." But as I said, this is a peaceful assembly.

We come up here annually to cure our warlike spirit, to heal our differences, to bury all the little animosities and differences that may have germinated during the year, to cultivate fraternal feeling, and we come here and meet in our own halls upon our

own premises not simply for our own enjoyment, but to extend our hospitality to others, our friends and neighbors, our friends both at home and abroad.

We are fortunate this evening both in the number and quality of our guests—our new Mayor, who has already earned an enviable record, the distinguished and accomplished President of the Massachusetts Society, superintendent and principals of our schools, professors from Amherst and Clark and the Institute of Agriculture, Rhode Island, and presidents of many of our local institutions, guests also from the Fruit Growers Association—and fellow-members in your name and behalf, I welcome these our guests in the festivities of this evening.

Now I presume that a large proportion of this audience have somewhat the feeling of the colored man down South, who was in the employ of a stanch churchman, an Episcopalian. He used to attend church with him as long as he worked for him. He left his employment, and his employer having missed him from church met him one day and said, "How is it that I have not seen you at church lately?" "O yes, I go to church." "Well, but I have not seen you at our church." "O no, I am a Methodist." "How is that?" "Well, you see, Massa, the Methodists, they get right down to business and give us a good gospel service, while these Episcopalians take half the time to read over the proceedings of the last meeting." Now I presume the younger portion of this audience would be very glad to waive these proceedings and get right down to business on the floor below, but there is another portion who believe that a feast is never quite complete unless flavored with a little salt.

Now we must divide the time the best we can between these two elements, and right here I will caution the speakers to make their addresses short. The President has suggested that they be limited to ten minutes, but I think that would be a rather arbitrary rule. I know last year one of our speakers, feeling that he must come within that limit, broke off suddenly in the midst of the most interesting speech, although there were loud calls for him to go on. Well, that gentleman is here tonight and we will have the remainder of that speech, but if any

speaker should be talking a long while and not really saying anything at all, it would not surprise me if the President should rap on the table.

It is stated that a little girl in this city, the daughter of a prominent politician, was saying her prayers one night. She had been taught to pray for brothers and sister, father and mother, and she wound up by saying, "Now, God, you take care of the city for if we lose you we should have nobody to look after us but Mayor Dodge, and papa says he has the bridge on his hands and he cannot do everything."

I now have the pleasure of introducing to you our Mayor, Rufus B. Dodge, Jr.

Mayor Rufus B. Dodge, Jr. *Mr. President, Ladies and Gentlemen, and Fellow-Farmers:*—I assure you that it delights me beyond measure to meet with my fellow-agriculturists. It is refreshing indeed to see Farmer Parker without his overalls and jumper, and Farmer Paine, leaving his pastoral pursuits and donning his dress-coat, a luxury which we farmers cannot often enjoy.

I was approached a few days ago by a musical gentleman of the city who desired my name in connection with some musical entertainment. I said to him while I would be very glad to endorse it, I feared it would have but little weight if the fact was known, because, to tell the truth, I was unable to tell the tune of Yankee Doodle from Old Hundred, which I assure you is a fact. And he remarked that if that were true I had certainly missed my calling, that I ought to have been a musical critic. And taking that for a fact, I see no reason why I cannot discuss with the farmers of the city and the growers of plants and fruits all the great questions which make them prominent.

The example which our elders set is responsible in a measure for the conduct of the younger people, and I must say that I deem it my duty to solemnly call your attention to the conduct of my venerable friend Mr. Hadwen when he told you the reason why he did not make a speech. The real reason of it was as he told me, and I have every reason to believe that it is true, that he had

it all typewritten and he brought here a letter which was typewritten instead of his speech. Now if my venerable friend, with that blandness with which he usually tells the truth, can utter such a statement it would justify me in almost anything that I may say. I shall detain you but a few moments. I will not even reach the limit which the toastmaster has set, because I have an appointment with my own family at a time which is somewhat past, and if I delay very much I shall have a worse state of affairs on my hands than the Spaniards have got on theirs; and, besides, I know something of what you have got to endure before you get through. That is another reason why I am going to leave early. You have Principal Lewis here, and I have heard him speak, and you have one or two others that I will not name, because if I name many more of them I am afraid you will all leave.

I was impressed on a visit to the Southwest and through what is called the Badlands of Texas to see the natural resources in reference to the production of the soil as compared with that of old New England, represented in this State by Worcester County, which is rugged and barren compared with the vast fertile fields which roll as far as the eye can reach in that vicinity. I suppose there lies in the northern and central parts of Texas perhaps as fertile a plain as the United States contains. I presume that if it were cultivated to the full extent of its resources, the State of Texas alone might produce all that this country would consume so far as feeding its inhabitants is concerned; but after all as you stand there and gaze over that vast expanse of territory, upon this fertile spot on the surface of the earth that appears to have been made by the hand of Providence for the production of food for man and all those things which come from the earth, and compare its value with all its advantages of nature to the value of the same acreage of land of Massachusetts or Worcester County, you realize at once that it is not the extent of territory, it is not altogether the fertility of the soil that makes the locality, it is not altogether what nature has done for this particular portion of the earth's surface. And there never was a time when all the peculiar value of the New

England fields came to my mind more forcibly than when I visited that locality, and never was a time when I more fully appreciated the fact that not only must you have the natural advantage, you must have the people. Beside your farms must lie your villages; beside the place where you produce your crop must live the city; combining the two, you have what we have in Worcester and Worcester County and in Massachusetts. We have our people, we have our manufacturing establishments, we have our farms, and we have enterprise in every branch and every business that is pursued within our city. We have met with success because we have deserved success. It has been wrought out by the ingenuity and perseverance of our citizens; it has been supported and fostered by your organizations and societies of which your own, as shown tonight, is a high type. It is indeed gratifying when men of intelligence, learning, and standing in the community, as shown by your members and attendance, feel so keen an interest in this department of your society that they give it their support and their aid. May it continue, and may your success be commensurate with what is deserved from the efforts of your members. May it continue to be an ornament to this glorious old city, the Heart of the Commonwealth; a city which shall grow and continue in prosperity beyond anything you perhaps recognize or realize today by a growth and expansion, healthy in all its departments, sound in all its undertakings, built up by its citizens with the common purpose to make here a city indeed worthy of the old County of Worcester.

Mr. Parker.—There has always existed between the members of this Society and the members of the Massachusetts Horticultural Society the most kindly and cordial relations. This evening we have the pleasure of entertaining its president, the Hon. Francis H. Appleton.

Hon. Francis H. Appleton. *Mr. President*,—It gives me great pleasure I assure you to have the opportunity of coming up from the suburban city of Boston and greeting you ladies and gentlemen this evening. It gives me pleasure to come up

and bring to your honored president and yourselves the hearty greetings of the Massachusetts Horticultural Society and bid you Godspeed in all your efforts for horticultural good. I am glad to come up here and pay my respects to so many who I know personally are experts and thorough horticulturists. It is an honor to come to this city which has such diversified interests to my mind, and if any troubles in the business line should come I do not see how it would be possible for them to affect Worcester much. She has no one basket of eggs like some cities; they are thoroughly scattered, much to her credit. It is a pleasure for me to come here and renew old associations. One early one has been referred to this evening, and it makes me feel that I hope they won't have a new bridge. That may be all wrong, I don't know the local feeling at all. But I will tell you why I say so. When I was a year or two younger than I am now, I used to come up here and cheer the boat-races, and it was one of the times when Harvard used to win and we had four consecutive years of my ruining my voice and Harvard's winning. I was told tonight that usually about twenty-five youths were shut up in one of your hotels, but I never got in there myself. It must be a very inhospitable place not to take everyone into the hotel. I have the most delightful recollections of that bridge, which existed then and I think it is the same one that is there today, a wooden bridge stretching from pier to pier, if I am not wrong.

Mr. President, there is a serious side to this, and a practical one which comes up into my mind. And it is one that I had the pleasure of speaking on in another part of Worcester County the other day. I am not an educator, I am not in that line, but I have had the honor of speaking on the subject, and, gentlemen, it has given me much pleasure to do so. It is that I wish that we could have a little more botany, a little more entomology, and a little more natural history in our schools. Not for those things in themselves, but for the powers of observation that come from studying those things, which it seems to me cannot fail to be of great value to everyone. Look at the grand men who came from the homes of New England where they were

brought into immediate touch with nature, where they studied all the growths of nature, not perhaps as they would today but they got thoroughly into it. They knew about them in a way, they cultivated the powers of observation which are so valuable to us all.

It is a pleasure to me to be here today in this city which is noted among other characteristics for its exquisite parks, which have been built up by the efforts of its citizens, helped wonderfully and handsomely by the gifts of individuals who have made themselves remembered by helping the city so.

Mr. President, as I said, I bring you the best greetings of the Massachusetts Horticultural Society, and long may you live to prosper in every way.

There is one more thing before I sit down. It is my burden at the present time to hold the office of Commissary-General of the State of Massachusetts. I do not speak of that egotistically at all, but perhaps you do not know that under the laws of the State, the Governor is in charge of the army and navy of Massachusetts, and he can also grant a passport, as I have had them from Governor Rice when I went to Cuba at the time of the first trouble there in 1869. Now Massachusetts may go to war with something outside of Massachusetts, therefore, I appeal to you to be prepared if it comes in my time to help me out with plenty of supplies, and I know they will be good ones if the city of Worcester helps to make them.

The Toastmaster.—I hope General Appleton will excuse me for not giving him his proper title, but the fact is he has so many positions of honor and trust that it would take perhaps as long as a short speech to give them all.

The General has spoken of putting nature study in our schools, and right here I will call upon Professor Hodge, a member of our school-board, and professor of physiology of Clark University, who is especially interested in introducing nature study in our schools.

Mr. C. F. Hodge. *Mr. President, Ladies and Gentlemen:*—I confess that I am rather glad to be called upon on a

subject like this for two reasons. The first one is that not long ago at one of the meetings of the Horticultural Society it was stated that Clark University stood for pure intellectualism. My joy in being called up is in the thought that I can repudiate a statement of that sort. Certainly the man who made the statement could never have heard Professor Hall lecture upon Education of the Heart, and Education of the Will, if he calls Clark University an institution of pure intellectualism. The truth of the matter is, I take it, Clark University stands for such a subject and things as the Worcester County Horticultural Society stands for, that is, for the kind of education which should be from the beginning active education. Now the old basis that Plato and Socrates laid down is that the first step toward virtue is to know what is best to do. We must have of course some knowledge as a basis of action. Nothing in the world is so terrible as active ignorance, so we must learn in order to know what to do, but unless we do what we learn to do what availeth our knowledge.

The other subject which has been a "Bee in my Bonnet" for some time, is that of nature study in the public schools, and it did my heart good to hear President Appleton bring it out as he did. It is something that I think is not appreciated by the more conservative portion of the Society. I believe our nature study is a movement back toward Paradise in the horticultural sense. If we can make it a study which shall give the young people of the country a knowledge as to what is good to do in horticulture, and then by some means or other induce them to make that education active, to bring it out in their lives and in their practice, we may have a horticultural community which will show the country what a city can be made to look like with a horticultural people in it. And right here I would say in conclusion, that the Worcester County Horticultural Society strong as it is, vigorous in all its branches, containing as it does practical and theoretical horticulturists (I count myself in both of these classes), can do the work for Worcester through the public school which no other institution in the place can do, and which it seems to me would be the legitimate work for the Horticul-

tural Society. To do that is to encourage the knowledge, or as the Constitution of the Society says, "the advancement of a knowledge of horticulture and its practice by doing something to encourage the children to actually raise flowers and fruits." I consider that a part of the child's education which is largely neglected today, but which would solve the problem of juvenile trespass in flowers and fruit and make it possible for those who love them to raise them unmolested; that is, if the child puts forth his energy to raise something himself he learns, in a way that you cannot talk into him or preach into him in a lifetime, the value of having something which he has raised. So I hope in the future that the Horticultural Society may possibly do something to encourage the kind of education in our child population that it has so faithfully encouraged in its own members.

The Toastmaster.—The professor was too modest to state that he had put his theory into practical operation in encouraging the growth of plant life in our schools by distributing seeds and offering prizes at his own expense.

Now I think we have said a great deal on this question of education and nature study, and will follow it up by calling upon the superintendent of schools, Mr. Clarence F. Carroll.

Mr. Clarence F. Carroll. *Mr. President, Ladies and Gentlemen:*—There seems to be no common ground between the city and the country. The moment a boy comes within the influence and atmosphere of the city he seems to be pretty thoroughly cut off from all the beautiful things that God has made and placed in the country.

I need not emphasize the distinctive tendencies of our city civilization, of all that is artificial and stimulating here, and I am very glad for just a moment to follow in the line that has been suggested by our distinguished friend, Dr. Hodge. I am glad that there is a society that has set as its purpose the restoring to some extent, to some slight extent, paradise in the city, that it has made our parks green, and that it is planting trees and building lakes, and giving to us some suggestions of what as a city population we have lost. I am glad that there

is an interest among the people themselves that is very deep and heartfelt in this direction. We see it here tonight; we can sense it at every assembly of this kind. When beautiful things are brought in from the world outside, we can feel it in the school-room,—I always like to say this whenever I have the opportunity in Worcester. Those of you who have had the good fortune to visit almost any of our school-buildings will find a veritable garden cultivated upon the narrow windows and in the corners of the rooms. I am glad, too, that our friends of Clark University have taken up this work, and that they are emphasizing it in the largest and best way.

I can just give you this one suggestion, that nature study, as it is suggested to us at Clark University, means the relation of things, and when we hear of the flowers, we hear of the insects that destroy them; and when we hear of the birds, we hear of the insects that are related to the birds; and when we hear of the apple, we hear of the insects—that I believe I heard Dr. Hodge speak of the other night—that destroy eighty per cent. of all the apples that are blossomed and that would ripen but for the influences that destroy them. I say this is the practical side of nature study, and we have reason to be glad that Clark University stands for something more than intellectualism, something that is practical. This reminds me of a little meeting that was held the other night in the City Hall. We had a solemn little conference, Mr. Hodge and myself, before hand. The point was to get some apparatus for the Upsala street school and some other material to go along with it. I told the doctor that if he presented the case it would come out all right. He stated a few of these little things as no one else could have done and the committee most gracefully and vigorously voted all that he asked for. I went out with one of them and he said: "I always thought those university professors were cranks, but evidently Dr. Hodge knows what he is talking about. There is something practical about it." I say this for the doctor's encouragement, and for this reason I am glad our friend, Mr. Appleton, has suggested more forcibly than anyone, perhaps, here would dare to the idea of introducing another study into the public school.

I would suggest that we introduce horticulture and agriculture into the public school. I think my friends who criticized our course of study will say that it is only another thing to burden the children, to bear them down and overwork them; but I am glad that it comes from Boston, everything that comes from Boston is all right, so there must be a good reason for saying that we want a little more nature study in the public school. I think we are safe, Mr. President, in the suggestion, and I hope that it will be followed up. I hope that in every schoolyard in Worcester there will be some green thing growing, a few fish swimming, something to suggest to the children the life that is so abundant and so beautiful in the boundaries of the city which some hardly ever reach.

There are sixteen suburban schools about this city. I visited one of them, beautiful in architecture, beautiful in situation, beautiful in its surroundings, and one of the teachers who had reason to know what she was talking about said that her father had promised to put everything into their yard that she asked him to. And she said: "We are going to have the grounds fixed up and we want you to come down later in the season and see them." The Bloomingdale is all trimmed up and fixed in the latest style, on horticultural principles. This is an interesting topic to me. It comes very near to me. I feel that these children are robbed of something in not having what we suggested for them. A student of one of our public institutions said to me the other day: "We are missing it in not putting into our country-schools something of horticulture. These children are farmers, all of them. We have our agricultural colleges, but they are rapidly becoming like other colleges." I hope this is not true of Amherst nor, indeed, of any other agricultural college. In a little town in New Hampshire I found that there had been forty-eight deaths and sixteen births, and that is about what has been going on in all the country towns. There are very few children left now. Of over forty children who attended school where I first taught, they are all gone but two! Is there anything our society can do to make them contented to remain in the country? Cannot we devise anything

by which they could make a good living and be contented upon the farm? That would be something for New England. A little celery patch, rhubarb patch, onion or flower patch is capable, as I understand it, of enabling the industrious and skilful man to make a good living. The Italian, the Portuguese, and other foreigners are skilful gardeners and able to earn a good living.

There is a great work for this Society in making it possible over New England to restore the population, to hold its own, and to hold an important place in the future history of this country. I am glad that I am from New England, I am glad I am from Worcester, and I am glad to be here tonight. I thank you, Mr. Chairman, and I thank you all for your attention, and predict the best things for this society and this line of work that is so strong and confident in this city.

The Toastmaster.—As a representative from the Rhode Island Agricultural Experiment Station, Professor of Horticulture, and a graduate of our agricultural college of Amherst, and what is of still more interest, a Worcester boy and a son of one of our most active members, it is a pleasure to me to introduce to you Professor Kinney of Providence.

Professor L. F. Kinney.—I cannot do less than thank the toastmaster for giving me a chance to say a word. I should like to say just one thing about the influence which, it seems to me, this Society and the society at Boston are exercising upon the people of Massachusetts. I grew up in Worcester County, and was a regular visitor and occasional exhibitor in this hall in my younger days; and at that time the fact that the Society was here and in a prosperous condition made very little impression upon me. I enjoyed coming here, and enjoyed the competing and witnessing the exhibits of others, but since then I have been in districts where there were no active horticultural societies, at least not as active as this, and I see what those communities are missing. As I reflect upon it, it seems to me that the men who founded this Society deserve a great deal of credit, more credit than I imagine a great many of us are inclined to

recognize. The societies, both this and the one in Boston, are influencing the children now, they are teaching the children now horticulturally in their work in weekly exhibitions, and I doubt if any educational institution will succeed in improving very much upon the method that the society has adopted. I wish myself that there could be a closer co-operation between the horticultural societies and the public schools. I have watched very carefully the suggestions along this line, but I fail to see yet what seems to me a satisfactory solution of the case. However, the societies are established, and I see no reason why they should not go on generation after generation. Their income is provided for, and all that is necessary is for a judicious management of the funds and the weekly exhibitions can go on. The best way in the world to encourage the children to practice horticulture is to offer premiums, which this Society and other societies are doing.

When I was a boy I exhibited here. I was surprised in looking over the Transactions of the Society to see how long ago I used to come here, and I saw accounts of premiums that were awarded in the Transactions that left no chance for doubt but that I received some benefit. I believe that I received the most valuable elementary education that I have ever received, under the auspices of this Society. Not only the exhibitors are influenced by the exhibitions, but a class of people who care nothing for horticulture other than the fruits and vegetables which are grown in the country. They receive valuable lessons at the exhibitions. This in a way prepares a market for choice products that can be grown by members of this Society. I thank you, Mr. President.

The Toastmaster.—The principals of the two high schools are guests here to-night. We shall hardly be able to give them both a chance to speak, so that we shall have to split the difference between the two. I think it would be the right thing to give Mr. Lewis, the principal of the English High, a chance to repudiate the aspersion that was cast upon him by the mayor.

Mr. Homer P. Lewis.—*Mr. President, Ladies and Gentlemen:* I am afraid I shall not be able to do that. I must con-

fess to considerable uncertainty in my mind when I attempt to answer satisfactorily to myself why I am invited to speak at a gathering of horticulturists, where your speakers, no doubt, are expected to illuminate more or less some horticultural subject. I hope that your committee thought I looked like a horticulturist, if so, I feel flattered decidedly. I am in the condition of the three men in the story, which you may all have heard,—of the Englishman and the German and the Irishman. They met and the Englishman in his pride was telling how he was often taken for the Prince of Wales. The German replied that that was quite a coincidence, that he was often taken for the Emperor William; and Pat said, "I met a man the other day and he cried out, 'Howly Moses! is that you?'"

My own training and work has been altogether in other lines, and I am rather dismally conscious that if I attempt to speak on a subject appropriate to the evening, I shall simply make a spectacle of myself, wading about in my own ignorance. Some years of my youth and some in later life were spent, however, in digging earnestly after Latin and Greek roots with more or less success. I think I know fairly well at what season the seeds of these varieties may best be sown, and what sort of soil should be selected, and in what sort of soil dry-rot is encountered. I am frequently told that I have been working at the deadest kind of dead roots and could not possibly find a sale in any up-to-date market. Then I have some knowledge of algebraic roots, cube roots, and roots of all sizes and shapes; and so many unknown quantities enter as factors into this branch of gardening that it should not be undertaken by anyone who expects more than fairly certain returns, in fact, personally, I should be inclined to place algebraic roots little higher in the scale than that other variety, dead-beats.

I have had considerable experience in keeping hens, and it may puzzle some of you to see the connection between hens and horticulture; but if you happen to be a hen fancier and your neighbor has a fancy for a garden you realize that you don't need to puzzle yourself about the connection, the hens look after that. I did try once, I recall, to have a garden and keep

hens at the same time. In the innocent guilelessness of my inexperience I reasoned in this wise, that the hens, if properly treated and well instructed, would realize that they had certain duties to perform and they would go through the garden and yard and destroy all the worms and insects injurious to vegetation, but I found that the gray matter does not predominate in the brain of the hen. Those hens of mine got all mixed up as to their duties and seemed to think that they must destroy the vegetation lest it might be harmful to the worms and insects. I remember that I had one that I named "Maud" because she was continually hearing an invitation to "come into the garden." Then for her—

> "Stone walls did not a prison make,
> Nor wire fences, a cage."

But she answered the invitation. It is but just to myself to say that my experience in gardening was extremely brief.

I feel that it would be hardly proper in this presence to speak without recounting to some extent what the world owes to the horticulturist. On such occasions as this a society of this kind has a right to feel a little proud and to boast of what has been done in the past, and to hear good things said of itself. Why, at the annual banquet of the Granite State Society we boast without fear of contention that the garden of Eden was in New Hampshire, and the serpent was unable to obtain the price of admission. We then claim, and we have the authority of a well-known horticulturist to back up the statement, that the first land to rise above the water in the beginning of things was the southeastern part of New Hampshire. It has been objected by a doubting Thomas that this runs counter to Genesis when it says that the Lord after he had created the land looked upon it and pronounced it good, and no one could for a moment think that that could apply to the land of southeastern New Hampshire. Of course we made light of that objection.

Now to come back to my point which is the service done for mankind by the horticulturist. Some years ago I chanced to study somewhat carefully the condition and manner of living of

the English laborer and farmer. During the last five or six centuries it was surprising to find to what a narrow range of vegetable food the diet of the English was confined in that period. In the 14th century, wheat, rye, oats, and beans furnished the material for the vegetable food of nearly all the Englishmen. There were practically no garden vegetables and few fruits. Come down to the beginning of the 18th century and we find no improvement in the monotony of such a diet from one year's end to another. The English farmer of that period was not progressive, and did not take kindly to the idea of any new vegetables. He learned very slowly and unwillingly from his more advanced Dutch neighbor. It was, I believe, Lord Townsend, who, after his alienation from Walpole, retired from the ministry and then set the fashion of Gentlemen farming in England. He devoted himself to the introduction of new vegetables, the improvement of the varieties already existing, and to making converts to horticulture among his friends. In a short time a great number of the English nobility and men of wealth imitated his example and it became the rage in the latter part of the 18th century. "It was to these men," said Rogers, "men engaged in business and politics, who pursued agriculture or horticulture as an avocation, that England owes at the present time her prominence in the variety and excellency of her fruits and vegetables. The diversity of the food of the people is a very good indication of its civilization—some accounts say that it was in a great measure the cause of their civilization. If this be true, we can certainly affirm that the men who have been moved by the spirit which animates this Society have played no unimportant part in the progress of mankind.

The Toastmaster.—The Fruit Growers Association of Massachusetts, a society organized in our hall some two or three years since, is holding its annual session in our hall today. Some of the members are present and among them its president, who is one of the oldest members of our Society. I have the pleasure of introducing Mr. George Cruikshanks.

Mr. George Cruikshanks.—There is one thing that I will take advantage of, and that is the opportunity to bring to the Worcester County Horticultural Society the greetings of the Massachusetts Association and will express the hope that the seeds of horticulture that were sown by the founders of the Worcester Society may continue to grow and prosper more luxuriantly in the future than they have in the past.

The Toastmaster.—The President reminds me that the limit to the exercises of a literary character is now approaching, and there is time for only one more to speak. As usual I have reserved the best wine till the last. You may remember of my alluding to a guest last year who left his speech unfinished. He is a member of the Massachusetts Society and has a military title. We are honored in having two generals here this evening, General Appleton and General Wilson. I have the honor of introducing General Henry W. Wilson.

General Henry W. Wilson.—I had hoped you would draw the line at the General, I do not claim it, I am not entitled to it. I hardly know what to say in this presence. The hour is getting late and my ideas are slightly mixed. You are impatient to go, and I feel that what I might say would not interest you. I would like to finish my speech, but really I have forgotten what it was, and consequently it might not be of any advantage to you. I have been thinking what a pleasure it would be for us in Boston if we could enjoy such an occasion as this. We have all the evidences of material prosperity, and we have a hall that is valued at $700,000, and it is all paid for. We have a library of untold value. We have investments of funds which will make us wealthy beyond the dreams of avarice; then we have a membership of one thousand, and I have never witnessed there such an occasion as this. We run the whole gamut of social life from the millionaire who counts his millions down to the man who delves and toils in the soil for for his daily sustenance, and to get them together on a social plane is a physical improbability, still they get along harmoniously and do their business properly. The social element we

have not at all, and it is hardly thought to be possible; that is one thing that we have missed, one thing that is delightful. That is one reason why I am pleased to be here to talk with you. I came last year with something on my mind, what it was now I cannot think—it is no matter. I had sat and listened to the remarks about the school, the introduction of botany and gardening. Well, that is a nice thing to do provided you do not introduce another text-book and put another burden on the teacher. The great trouble with our whole system, that was inaugurated as I left the school just fifty years ago, is, we make slaves of our teachers and ignoramuses of our children. All the time that I had children in the Graham school near my house, I was trying to impress upon the principal of that school the fact, that I had discovered from examining the boys' lesson papers, that he was simply teaching the children what I taught my children at home. They taught them nothing in the schools, and I think if I had grown up under the system which now prevails in the schools of Boston, that I should have been an ignoramus myself, which I am not.

We have one school in Boston that is a sample for the schools of the Commonwealth, and the same system that has been adopted there can be adopted everywhere with success provided the teacher is an enthusiast in the study of botany and horticulture. Water will not rise higher than its source. The J. A. Andrews school in West Roxbury (Mr. Platt is the master) is the one I refer to. Mr. Platt has dug up and prepared a part of his yard, and encourages the children to scatter through the woods and fields and bring in some of the native plants. He discusses it and gives it a name, and they put it in, cultivate it, and watch it blossom and see if it thrives. This sort of instruction is useful. There is a good deal lacking in the matter of music in our public schools. There are many who cannot tell Yankee Doodle from Old Hundred, and there are many who cannot tell an orchid from an oak. It is idle to teach one music and teach one horticulture when he has no taste for it.

I want to say something to you practical about horticulture. We have in Massachusetts the men who best understand horti-

culture that live on this planet; we have the best farmers; we raise the best pinks and roses, everything from an orchid to a cucumber in perfection. We have the best market for the man who lives on what he raises on his acres. We have within fifty miles of Boston the most generous living people on the face of the earth, a population that will live generously and who know how to live. There is no gainsaying the fact. What you want to do is to meet the demand which they make to the highest degree.

From the earliest records which we have in this country, we have a continual repetition of the drought, drought, drought. The very best and most fruitful lands, under proper conditions, are oftentimes barren because of the drought. The annual precipitation of moisture that is necessary for the perfect growth of vegetation is from three to four inches per month. If there should be in a month not more than one inch it makes it impossible to obtain the best growth, and if there is no water at all there is commonly a prostration of the crops. An old farmer told me, a man seventy-three years of age who cultivates the farm on which he was born, "Mr. Wilson, I have in a long life been cultivating the soil exclusively for my support. There has not been a year that I can remember when, during some month in that year, I have not been anxious about my crops from the effects of the drought. I never knew what it was to have perfect satisfaction in the cultivation of my fields until I got water, a water trough with which I could supply the deficiency of nature. I happened to be in a town where water was introduced as a system for supply. The farmers soon got on to the fact that irrigation was profitable in Massachusetts. One used it, another used it, and in a very few years they exhausted the supply. There was not enough for so many. Then they were all cut off, but they had found that it was useful to have a supply with which they could make up for the deficiency of nature. They found by meter that they used two million gallons in one year, for which they paid six hundred dollars, twenty cents per thousand gallons." One who was educated up to the point that water was useful and profitable and that he could

afford to pay twenty cents per thousand gallons. He found that by an expenditure of about three thousand dollars he could get a supply of eight million gallons. The first year he had five acres of strawberries, and the drought in the month of May cut off the strawberry crop, and on that five acres of strawberries he cleared three thousand dollars more than his neighbors on the same ground. The next year was a repetition of the same experience. Thus you see the importance of using water, having it to control through various agencies in order to make good the deficiency of nature. Now the farmers and gardeners of New England are not aware of the means which they have at their command. They do not fully realize how easy it is for them from a neighboring brook or pond or by making artificial reservoirs and using the natural supply of water to obtain the necessary amount for the successful raising of crops. I find men raising a crop for ten dollars when they might raise one for one hundred dollars.

Some years ago, perhaps ten, I boarded during one summer with a farmer in the southeastern part of New Hampshire. The land sloped to the south. It was a light, warm, sandy, loamy soil, and that man was raising milk on his farm. He was keeping seven or eight cows, raising potatoes and corn, and that was farming! I observed his operations and took notes of what his business might be. One evening we had a colloquy. "My friend," said I, "as near as I can make out all you get for labor is a pile of compost in your barn-yard. What you get for your milk at the station is just equivalent to the value of your hay on the cart when you put it into the barn. And so all of your trouble in piling that hay into the barn, cleaning the stock and milking them, and the whole work and burden of your life, is thrown away, and all you have to show for it is a pile of compost in the corner of your barn-yard. Is that a practical way to look at it? Is that a valuable equivalent to your life's labor?" He did not know. He knew no better life, for he had been brought up in the old school.

A quarter of a mile away was a pasture. A little brook came down through it. It started on a side-hill and I had been

there fishing and had discovered that it would be an easy matter and but little expense for the water to be brought down and spread over the land. The total cost would not be over two hundred and fifty dollars. I opened the subject to him and took him up and showed him how easily it could be done and figured up the expense. And you never saw such a bewildered look as that man put on as he contemplated the scheme. He still keeps his cattle and is still raising milk on that farm. That is a type of many men.

The horticulturists of this State should awaken to the fact that they have all about them the facilities, the means, and the supplies of water to combine together and divide up among them.

I knew of a farmer who thought he would like to sell some to his neighbors to help pay the expenses, but when he got the water he had three times as much as he had ever used before and he wanted to use it all himself. And the result is that today there is scarcely a celery plant that is raised as it was twenty years ago about Boston. And I think that there are millions of celery plants growing up by irrigation where twenty years ago not one celery plant could be raised without irrigation. It seems to me that they have the cheapest supply that you can find anywhere. For seventy-five dollars you can get a little machine that will carry the water to any point.

There is one thing that we want to observe. Some men think they must have a little pipe with an attachment for sprinkling the water on the soil. But that is a great mistake. The application of water to the soil must come without cooling the atmosphere. We want the hottest sun and the brightest skies and there is no one thing that grows that is benefited by the sprinkling of water. Some say it is like the natural fall of water by rain. That may be all very true, but if you had all rainy days in the year you would have very few crops but grass, and that would mildew. What we want is a large volume of water at our command, one hundred or one hundred and fifty thousand gallons, a quantity which will enable men to drench the land and make good the deficiency of nature. I have, Mr.

President, been trying for the last twenty years to inculcate on the farmers and horticulturists the fact that they can, if they will, have the resources which nature has placed at their disposal for the cultivation of the soil.

THE TOASTMASTER.—I have a letter from the oldest member of the society, one of the original charter members, Mr. Hathaway, who is unable to be present on account of ill-health. I am sorry that I have not time to read it but I will give it to the secretary for publication.

ENFIELD, CONN., March 1st, 1898.

OBADIAH B. HADWEN, ESQ.,

President Worcester County Horticultural Society:

MY DEAR SIR:—It is with exceeding great regret that I find myself compelled by reason of lumbago (not plumbago) in the back (that prevents me from walking upright righteously), to decline your kind invitation to attend the annual banquet of your Society, and to answer to a promised call of your venerable toastmaster, who shows no visible signs of any cruelty of the heart, though he makes hearts to tremble if he "doth but carelessly nod at them," but I tender you a few suggestions, which if you think worthy and time will permit you can have offered there as from an antideluvian of a former age, one of the few, I believe but two, of the charter members, the one-dollar disciples of this association, who were in at its birth, H. H. Chamberlin being the other. Again you gather within the hallowed shrine of memories sweet of bygone time. From the walls they look down upon you with benignant smiles of welcome. The leaders and the beloved comrades of the foregone. The "living present" is wreathed with garlands beautiful culled from the gardens of the past, sweet scented with memory's enduring fragrance—of fathers and mothers, sisters and brothers, who now cultivate the immortels, where flowers fade not, in the garden of the Lord. Mingling here with the white chrysanthemums of the silver tops are the full blown roses of womanhood, the blushing buds of girlhood and of young manhood, wearing the dudish boutonnière of pride stuck in their buttonholes!

Perchance our venerable, long-loved President speaks his words of welcome to *thee* and *thou*, but alas! *not* to me. Wisdom, wit and eloquence flash their thoughts from lips of eloquence touched with the fire of the gods. On a subject of deep interest a few thoughts may not be inappropriate.

ELM PARK—should it not be LINCOLN PARK?—where our beloved assistant gardener of the Lord helped Nature to carry out her designs of beauty, and not to thwart them with the arrogance of man trying to improve on God's plan.

He wrote his name on the meadows green of his childhood's home, to keep it as fresh and green as the arbutus, the hemlocks, the spruce and the pines, living characters, with which he wrote love-letters to the gods of the beautiful to consummate his designs. Loving hearts there are who feel that his work should ever remain as he left it, forgetting that "change and decay is the law of Nature," and to develop its beauties and make them steadfast the prudential hand must clear away Nature's decay, and give her full sway to carry out his design of the beautiful.

Old NEWTON HILL, a grand monument of his love. And from its summit high, Faith with prophetic eye discerns afar its wrought out beauty his genius has planned.

HADWEN PARK! The Quaker home of our President, with its broad avenues lined on either side with the shivering maples, the lofty elms, and the dark cool evergreens his hand has planted there. But above the trees and the shrubs is the quiet Quaker love that has made his garden beautiful, an unabridged dictionary of Nature that spells out the mysteries of every clime with its trees and shrubs and vines, transplanted from their native soil and nurtured by his loving care. He knows them all, and calls them by their names—

And they lift their golden petals up,
Wave their leaves of silver sheen,
Of blue and red and green,
As he walks their ranks between.
King of the garden beautiful.

The rarest horticultural exhibition of all New England.

INSTITUTE PARK.—Another misnomer, for it should be SALISBURY PARK, for no other name "doth become the mouth as well." No other name will tell of the three Stephens, who have made so large a part of the history of the village, the town, and the city of Worcester; a park of beauty, yet characteristic in that only *one* column stands alone and lonely, with no mated goddess of beauty standing by its side to help uphold its crown of loveliness. Yet, while there is life, there is hope, and, young ladies, a great responsibility devolves on you to see to it that this living column be suitably mated!

DAVIS PARK.—Another monument of another heart's true lover.

Bigelow's Park, and Historical Society Park.—

All on the banks of Old Long Pond,
Now modernized to Lake Quinsigamond.

The Old Heart's inland sea of pleasure and beauty, a breathing spot of the rare air of vitality, a free bath where dirty humanity can cleanse its outward form, and as "Cleanliness is next to Godliness," help to purify the soul within. God, when He made it by pouring the waters from the hollow of his hand to cover the land, gave it in fee simple to all his children for all time, share and share alike; and later Gershom Rice when he built his log hut in the little hamlet in the wilderness, caught fish there and obtained a preëmption title which has come down to his descendants following, and it is today as free as the air above it—free to all hearts that love it.

University Park.—Where Dr. Hall teaches the science of beauty from the open book of Nature, and where Dr. Hodge cultivates the toads. He has published a full history of the toad in a one-fourth ounce vial edition, of which he kindly gave a volume to teach me and other numskulls that the toad is the progenitor of the tadpole, the pollywog, the bullfrog, and I don't know but of the sea-serpent, the hippopotamus, the crocodile, and all the amphibious tribe. Well, science is mighty and we can swallow much at its dictation, like as the toad swallows the worms and the grubs, working benefactors of horticulture and agriculture. Long may he live to preach and to practice, until mounted on the hobby-horse of science he shall ride into the kingdom, where the toads come not, nor the naughty boys save through regeneration.

This Society is no more a mere garden for the cultivation of fruits, flowers and grain for ornamental prize shows, but it is a power in the land—the school of science to study out the wonder-working of the power divine and teach them to all mankind. It has been a great factor in cultivating the taste of the beautiful to adorn the homes that makes this Old Heart of our hearts so *very* beautiful. The fruits, flowers and the golden grain are the Christmas gifts the Santa Claus of God's love brings to all his children. Here and there and everywhere are those with stockings crowded full, and *here* and there are those whose stockings have holes in their toes and cannot hold their share of its blessings. But all over the world generous Mrs. Taylor's cry, "Divide! Divide!" and all are warmed and clothed and fed and housed, even to the quaint, sharp newsboy tribe. The cry, "Oh, my, didn't I get two plates of turkey and two pieces of mince pie! Whoop 'er up for Mrs. Taylor. She's no snip

on the shares,—but she's got lots of *Cabbage!*" And we can pardon his enthusiasm for we have learned she has more, and better, a heart of sympathy and a hand of liberality.

As the centuries move on with the heavy tread of the Callenic step of years may this Society be found in the fore ranks of industry,—plowing, sowing, hoeing, growing; and may the crops it cultivates ever be the ultimatum of good, noble manhood, and loving womanhood,—and my closing toast shall be:—

FLOWERS.

Trembling pilgrims of springtime hours,
That spring up from Earth's silent bowers,
In buttercups, daisies, and the yellow dandelion
Each in the image of its scion;
Through the evolution of the ages
The Monkey has become the Man—
And the toad progenitor of all the amphibious clan.
Ere the earth was made, Mayflowers
Floated on Chaos' unknown sea,
Guided by the light and the song of the stars—
Born of germ seed dropped from the Red Planet Mars.
The yellow primrose is to some
Only a yellow primrose still,
While to the cultivated taste it hath become—
In this progressive age—golden drops
Of God's mint of coinage,
The brightest gem of Earth's coronet
Is not the rose, the pink or the violet.
But throughout the kingdoms human
It is God's last, best gift—
The Queen flower—*Woman!* H.

The Toastmaster.—We are sorry that we are unable to call upon our other guests, but time forbids, and by order of the president, this meeting is adjourned to the floor below.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1897-98.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Simeon E. King,	Millbury.
Henry Woodward,	"	Edward L. Davis,	Worcester.
John B. Bowker,	"	Henry Reed,	"
B. W. Potter,	"	Henry Phelps,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	Lewis A. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	J. Lewis Ellsworth,	"
Arthur J. Marble,	"	Frederick B. Madaus,	"
Samuel Flagg,	"	Mrs. John H. Coes,	"
Edward Hall,	"	Mrs. T. L. Nelson,	"
H. F. A. Lange,	"	Mrs. Thomas Ward.	"
Fred. H. Chamberlain,	"	Mrs. F. H. Merrifield,	"
William J. Wood,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

Fred. H. Chamberlain, 1900. George E. Francis, 1899. Nathaniel Paine, 1898.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, M.D., Joseph Jackson.

ON NOMENCLATURE:

O. B. Hadwen, George E. Francis, Albert H. Lange, Arthur J. Marble, George McWilliams, Herbert R. Kinney, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

Charles Greenwood, *Chairman.*

Frederick A. Blake, William J. Wood, George C. Rice,
Edward Hall, Henry L. Parker, Calvin L. Hartshorn,
Albert H. Lange, James Draper, Simon E. Fisher,
Mrs. F. H. Merrifield, Arthur J. Marble, Herbert R. Kinney,
President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.: George McWilliams, Whitinsville.
ON FRUITS, ETC.: Henry Rich.
VEGETABLES: Charles Greenwood.
NATIVE MUSHROOMS: George E. Francis, M.D.

SCHEDULE OF PREMIUMS

OFFERED BY THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR

1898.

The attention of Exhibitors is particularly called to the Rules and Regulations, General and Special.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
1898.

COMMITTEE

ON

ARRANGEMENTS AND EXHIBITIONS.

Charles Greenwood, *Chairman.*

Frederick A. Blake,
Edward Hall,
Mrs. F. H. Merrifield,
Albert H. Lange,
James Draper,
Henry L. Parker,
Arthur J. Marble,
George Calvin Rice,
William J. Wood.

Calvin L. Hartshorn,
Simon E. Fisher,
Herbert R. Kinney.

President, O. B. Hadwen.

Secretary, Adin A. Hixon,
Horticultural Hall, No. 18 Front Street.

JUDGES OF AWARD.

Flowers, Plants, Etc.—George McWilliams, Whitinsville.
Fruits, Etc.—Henry Rich.
Vegetables, Etc.—Charles Greenwood.
Native Mushrooms.—George E. Francis, M.D.

COMMITTEE ON NOMENCLATURE.

O. B. Hadwen,
Albert H. Lange,
George E. Francis, M.D.,
George McWilliams,
Charles Greenwood,
Herbert R. Kinney,
Arthur J. Marble.

GENERAL RULES FOR ALL EXHIBITIONS.

A. Strict conformity to the Regulations and Rules will be expected and required, as well for the benefit of Exhibitors as for the convenience of the Officers of the Society.

B. Correct and legible names must be attached to each and every Flower or Plant entered in a class of named varieties.

C. All articles offered for premium must remain within the Hall throughout the hours of Exhibition, unless special permission for their removal shall be granted by the Committee on Exhibitions, etc.

D. All *Small Fruits* must be entered in boxes or baskets (except in the case of Strawberries or Currants, which are to be shown "*flat*"); but they may be displayed subsequently in plates or dishes, at the taste of the exhibitor.

E. No person shall take more than one premium, under the same number.

F. The Judges may correct, before the close of any Exhibition, awards made by them, if satisfied that such were erroneous.

G. The cards of competitors shall be put, reversed, beneath the plates; and the Judges of Award shall be excluded from the Hall of Exhibition until the Exhibition itself is ready for judgment.

H. Competitors are expected to conform strictly to the conditions under which articles are invited. Evasion or violation of them may be reported to the TRUSTEES for future disqualification of the offender.

RULES AND REGULATIONS.

1. Exhibitions will be held on Thursday, March 24, April 21, and May 12. Commencing June 9 there will be Exhibitions every Thursday, until and including October 20, A. D. 1898. The hours of Exhibition will be between 3 and 4.30 o'clock. Articles offered for premiums must be in the Hall by 2.15 o'clock P. M. of the days of Exhibition. Between 2.15 and 3 o'clock the Hall will be in exclusive charge of the Secretary and the Janitor, who will allow no one else to be present. The Judges of Award may be admitted under the limitations of GENERAL RULE G.

2. Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are not members of the Society; and it is strictly required that all specimens offered for premium shall have been grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least two (2) months previous to the date of exhibition.

3. After the articles are arranged they will be under the exclusive charge of the Judges, and *not even the owners* will have liberty to *remove* them until the exhibition is closed; when they will be delivered as the contributors may direct.

4. No cards of a business nature will be allowed in any exhibition.

5. Where a certain number or quantity of Plants, Flowers, Fruits or Vegetables is designated in the schedule, there must be neither more nor less than that number or quantity of specimens shown; and in no case can any other varieties than those named in the schedule be substituted.

5. It will be the duty of the Judges to *exclude from competition all inferior specimens.* Also, all such *Designs* as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

7. The Committee on Arrangements have power to change the time of exhibition for any article, if an earlier or later season renders such change necessary; and the Secretary is requested to give notice of one week, in some daily paper, and also at the preceding exhibition, when a change in the Schedule is proposed.

8. All articles offered for premium must be correctly named. Indefinite appellations such as "Pippin," "Sweeting," "Greening," etc., will not be considered as names. Any person exhibiting the same variety of Fruit or Vegetable, under different names, or exhibiting as grown by himself, Flowers, Fruit or Vegetables grown by another, thereby violating the objects and rules of the Society, shall be debarred from competing for the Society's premiums until reinstated.

9. No Flowers, Plants, Fruits or Vegetables will be entitled to a premium or gratuity unless they possess points of superiority; and the Judges are *strictly required* to withhold awards if, in their opinion, the articles exhibited do not merit them; nor shall any specimen for which a premium has been once awarded, receive another during the season.

10. Competitors will be required to furnish information as to their mode of cultivation, and to present specimens, for trial and examination, if requested.

11. In all exhibitions of Cut Flowers, for competition, the use of foliage must be restricted to that of the varieties shown; and not more than five blooms, clusters, sprays or spikes, all of which shall be of one color, and of one variety, shall be allowed in the same bottle, or vase, except when otherwise specified in the schedule. The Judge may correct any error that he thinks was without deliberate purpose.

12. No Judge shall award a premium or gratuity in any case wherein he is a competitor, or has an actual or resultant interest; in any such case the judgment shall be rendered by any three of the Committee on Arrangements and Exhibitions whom the Judge shall invite.

13. No Judge shall require anything of competitors respecting their exhibits, which is not distinctly specified in the schedule. No Flowers, Fruits, etc., etc., shall be put on the tables, for competition for premiums, by any person who is a judge as to the awards to be made for Fruits, Flowers, etc., etc.

14. The standard number required for an exhibit, whether of Fruits or Vegetables, will be twelve (12); unless otherwise specifically declared. The usual limit of measure, save for SMALL FRUITS, will be a half-peck.

15. All premiums that are not claimed within three months after the close of the official year shall be forfeited to the Society.

16. The awards will be made known as soon as the cards can be filled out and placed upon the tables.

17. "Downing's Fruits of America," revised edition, will guide the Judge of Fruits in his decisions upon matters at issue.

☞ The Judges are authorized by the Trustees to invite the assistance of competent and discreet persons in the discharge of their duties.

FLOWERS, PLANTS, FRUITS, & VEGETABLES.

A. D. 1898.

☞ THE COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS would direct the earnest attention of the Judges to *Rule 6!*

6. It will be the duty of the Judges to exclude from competition all inferior specimens. Also, all such designs, as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

SPECIAL RULES.

1. Exhibitors will add value to their exhibits by having all specimens correctly and legibly named, and the number of varieties written on the entry cards. Notice of which will be taken by the Judge in awarding the premiums.
2. The Judge shall not award gratuities for flowers that are covered by the call of that day.
3. While it is expected that Exhibitors will take pains to correctly name their exhibits, the Judge will not exclude an exhibit for mistake in nomenclature.
4. In all exhibitions of Lilies the pollen may be removed.

By vote of the Trustees, all entries must be made to the Secretary, and all cards made out by him or his assistant.

Thursday, March 24.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

HYACINTH,—IN BLOOM.—					
No. 1.	Six plants, four premiums	$3 00	2 00	1 00	50
PRIMULA SINENSIS,—IN BLOOM —					
No. 2.	Four plants, four premiums	3 00	2 00	1 00	50
PRIMULA,—ANY OTHER VARIETY, IN BLOOM.—					
No. 3.	Four plants, four premiums	3 00	2 00	1 00	50
CINERARIA,—IN BLOOM.—					
No. 4.	Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
CYCLAMEN,—IN BLOOM.—					
No. 5.	Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
No. 6.	One plant, three premiums		1 50	1 00	50

CARNATION.—

No. 7. Cut blooms with foliage. Not to exceed 24 vases, four premiums	4 00	3 00	2 00	1 00

ARUM (RICHARDIA),—IN BLOOM.—

No. 8. Best collection; grown in an 8-inch pot; four premiums	3 00	2 00	1 00	50

AZALEA INDICA.—IN BLOOM.—

No. 9. One plant, three premiums		3 00	2 00	1 00
No. 10. Three plants, four premiums	5 00	3 00	2 00	1 00

CUT FLOWERS.—

No. 11. Not to exceed twenty blooms (clusters, sprays or spikes in vases), four premims	3 00	2 00	1 00	50

APPLE.—

No. 12. Any variety, named, gratuity.

PEAR.—

No. 13. Any variety, named, gratuity.

VEGETABLE.—

CABBAGE,				
No. 14. Drumhead, 3 specimens, three premiums	$1 50	1 00	50	
No. 15. Red, three premiums	1 50	1 00	50	
No. 16. Savoy, three premiums	1 50	1 00	50	
CELERY,				
No. 17. Six specimens, three premiums	1 50	1 00	50	
SQUASH,				
No. 18. Hubbard, 3 specimens, three premiums	1 50	1 00	50	
No. 19. Any other variety, 3 specimens, three premiums	1 50	1 00	50	
MUSHROOMS,				
No. 20. Twelve specimens, three premiums	2 00	1 50	1 00	
TURNIP,				
No. 21. Swede, Yellow, 6 specimens, three premiums	1 50	1 00	50	
No. 22. Swede, White, 6 specimens, three premiums	1 50	1 00	50	
No. 23. White Egg, 12 specimens, three premiums	1 50	1 00	50	
BEET,				
No. 24. Turnip, three premiums	1 50	1 00	50	

CARROT,

No. 25. Intermediate, three premiums.... ..... 1 50 1 00 50

LETTUCE,

No. 26. Six heads, three premiums.. ..... 2 00 1 50 1 00

Thursday, April 21.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS—BASKET.—

No. 27. No restrictions, four premiums....$3 00 2 00 1 00 50

ZONALE GERANIUM,—IN BLOOM.—

No. 28. Four plants, distinct in color, four premiums..... ..... 3 00 2 00 1 00 50

CUT FLOWERS,—NOT TO EXCEED 20 VASES.—

No. 29. Not to exceed 5 blooms, clusters, sprays or spikes in each, four premiums..... .... 3 00 2 00 1 00 50

HYACINTH,—IN BLOOM.—

No. 30. Twelve plants, not less than 6 varieties, four premiums..... 4 00 3 00 2 00 1 00

NARCISSUS,—NOT TO EXCEED 24 VASES.—

No. 31. Four premiums 3 00 2 00 1 50 1 00

TULIP.—

No. 32. Four pots or pans, not to exceed 12 bulbs in each, not less than three varieties, four premiums. 3 00 2 00 1 50 1 00

APPLE.—

No. 33. Any variety, named, gratuity.

PEAR.—

No. 34. Any variety, named, gratuity.

VEGETABLE.—

HORSE RADISH,

No. 35. Twelve specimens, two premiums $1 00 50

PARSNEP,

No. 36. Hollow Crown, three premiums 1 50 1 00 50

No. 37. Any other variety, three premiums 1 50 1 00 50

RADISH,

No. 38. Long, two bunches (6 in each bunch), three premiums 1 50 1 00 50

No. 39. Globe, two bunches (6 in each bunch), two premiums 1 00 50

SALSIFY,

No. 40. Three premiums 1 50 1 00 50

LETTUCE,

No. 41. Six heads, four premiums 2 00 1 50 1 00 50

RHUBARB,

No. 42. Any variety, three premiums 1 50 1 00 50

DANDELION (cultivated),

No. 43. One-half peck, three premiums 1 50 1 00 50

SPINACH,

No. 44. One-half peck, three premiums 1 50 1 00 50

Thursday, May 12.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

PANSY,—WITHOUT FOLIAGE.—

No. 45. Not to exceed 30 vases, one stem in a vase, four premiums $3 00 2 00 1 00 50

HYACINTH,—OPEN CULTURE.—

No. 46. Not to exceed 24 vases, one spike in each, four premiums 3 00 2 00 1 00 50

PELARGONIUM—(FANCY AND SHOW)—IN BLOOM.—

No. 47. Four plants, of distinct varieties, three premiums 3 00 2 00 1 00

TULIP,—OPEN CULTURE.

No. 48. Display not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 49. Not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

No. 50. BASKET,—No restrictions, four premiums 3 00 2 00 1 00 50

AZALEA—(MOLLIS).—

No. 51. For the best display in vases, four premiums $3 00 2 00 1 00 50

*

VEGETABLE.—

ASPARAGUS,

No. 52. Two bunches, twelve specimens each, three premiums.....$1 50 1 00 50

DANDELION,

No. 53. Cultivated, half-peck, three premiums.... 1 50 1 00 50

ONION,

No. 54. Two bunches, six in each bunch, three premiums..... ..... 1 50 1 00 50

RADISH,

No. 55. Long, two bunches, six in each bunch, three premiums..... 1 50 1 00 50

No. 56. Globe, two bunches, six in each bunch, two premiums 1 00 50

RHUBARB,

No. 57. Linnæus, three premiums..... 1 50 1 00 50

No. 58. Victoria, three premiums.... .... 1 50 1 00 50

No. 59. Monarch, three premiums..... 1 50 1 00 50

SPINACH,

No. 60. Half-peck, three premiums..... 1 50 1 00 50

Thursday, June 9.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 61. Not to exceed 24 vases, four premiums $3 00 2 00 1 00 50

No. 62. ONE VASE.—The specimens not to be tied or wired, four premiums. 3 00 2 00 1 00 50

NATIVE FLOWERS.—

No. 63. In vases, no duplicates, six premiums 3 00 2 50 2 00 1 50 1 00 50

PANSY,—IN POTS.—

No. 64. Six plants in bloom, distinct in color, four premiums 3 00 2 00 1 00 50

BEGONIA,—IN BLOOM.—

No. 65. One plant, four premiums..... 2 00 1 50 1 00 50

IRIS.—

No. 66. Not to exceed 10 vases, four premiums 3 00 2 00 1 00 50

RHODODENDRON.—

No. 67. Display, in vases, four premiums.. 3 00 2 00 1 00 50

AZALEA,—GHENT.—

No. 68. Display in vases, four premiums.. 3 00 2 00 1 00 50

CUT FLOWERS.—

No. 69. From hardy plants and shrubs, display not to exceed 24 vases, four premiums..... .. .... 3 00 2 00 1 00 50

PÆONY.—

No. 70. Not to exceed 20 vases, five premiums 4 00 3 00 2 00 1 00 50

STRAWBERRY.—

No. 71. Beder Wood, 24 berries, flat, three premiums..... .....$1 50 1 00 50

No. 72. Any variety, gratuity.

VEGETABLE.—

ASPARAGUS,

No. 73. Two bunches, twelve specimens each, three premiums.... ... .$1 50 1 00 50

BEET,

No. 74. Early, twelve specimens, three premiums 2 00 1 50 1 00

CUCUMBER,

No. 75. Three specimens, three premiums..... 1 50 1 00 50

SPINACH,

No. 76. Half-peck, three premiums..... 1 50 1 00 50

Thursday, June 16.

CUT FLOWERS.—

No. 77. One vase, the specimens not to be tied or wired, four premiums ..$3 00 2 00 1 00 50

BASKET,—NO RESTRICTIONS.—

No. 78. AMATEUR,—four premiums 3 00 2 00 1 00 50

No. 79. FLORIST,—four premiums 3 00 2 00 1 00 50

HAND BOUQUET.

No. 80. Not to exceed nine inches in diameter, four premiums..... 3 00 2 00 1 00 50

No. 81. Fuchsia, distinct varieties, four plants in bloom, four premiums.. 3 00 2 00 1 00 50

HYDRANGEA,—ONE PLANT IN BLOOM.—

No. 82. Six premiums.....3 00 2 50 2 00 1 50 1 00 50

STRAWBERRY.—

No. 83. Bubach, 24 berries, flat, four premiums..... 2 00 1 50 1 00 50

No. 84. Haviland, four premiums..... 2 00 1 50 1 00 50

No. 85. Other varieties, not scheduled, gratuity.

VEGETABLE.—

BEET,

No. 86. Twelve specimens, three premiums.....$1 50 1 00 50

PEA,

No. 87. One-half peck, four premiums ... 2 00 1 50 1 00 50

LETTUCE,

No. 88. Six heads, three premiums..... 1 50 1 00 50

Thursday, June 23.

☞ This exhibition will be open to the public from 3 P. M. until 5.30 P. M.

ROSE.—

[TO BE SHOWN IN THE VASES OF THE SOCIETY.]

No. 89. Best twelve blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums $4 00 3 00 2 00 1 00

No. 90. For the best six blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums 3 00 2 00 1 00 50

No. 91. Display, not to exceed 30 vases, of H. P. Roses, one bloom or cluster in each, five premiums.. . 5 00 4 00 3 00 2 00 1 00

No. 92. For the best basket of Roses, four premiums..... 3 00 2 00 1 00 50

No. 93. Vase, H. P. Roses, shades of one color, not to exceed 10 blooms, three premiums..... 3 00 2 00 1 00

PÆONIA.—

No. 94.	Not to exceed 20 vases, one flower in each, five premiums	4 00	3 00	2 00	1 00	50

STRAWBERRY.—

No. 95.	Greenville, 24 berries, three premiums	$1 50	1 00	50		
No. 96.	Leader, flat, three premiums	1 50	1 00	50		
No. 97.	M. A. C., No. 24, three premiums	1 50	1 00	50		
No. 98.	Marshall, four premiums	2 00	1 50	1 00	50	
No. 99.	Miner, four premiums	2 00	1 50	1 00	50	
No. 100.	Other varieties, not scheduled, gratuity.					
No. 101.	Best collection of not less than five nor more than ten varieties, five premiums	5 00	4 00	3 00	2 00	1 00

VEGETABLE.—

PEA,

No. 102.	Nott's Excelsior, one-half peck, three premiums	$1 50	1 00	50		
No. 103.	Any other variety named, one-half peck, four premiums	2 00	1 50	1 00	50	

ONION,

No. 104.	Any variety, two bunches, six each, three premiums	1 50	1 00	50		

TURNIP,

No. 105.	Any variety, three premiums	1 50	1 00	50		

Thursday, June 30.

CUT FLOWERS.

No. 106.	Display, not to exceed 24 vases (no duplicates), five premiums	$3 00	2 00	1 50	1 00	50

HAND BOUQUET.—

No. 107.	Not to exceed 9 inches in diameter, four premiums	3 00	2 00	1 00	50	

CAMPANULA MEDIA.—(CANTERBURY BELL).

No. 108.	Display, not to exceed 24 vases, three premiums	2 00	1 00	50		

DIANTHUS BARBATUS.—(SWEET WILLIAM).

No. 109.	Display, not to exceed 30 vases, one truss in a vase, four premiums	3 00	2 00	1 00	50

FOXGLOVE.—

No. 110.	Display, not to exceed 24 vases, three premiums		2 00	1 00	50
No. 111.	Display of H. P. Roses, not to exceed 24 vases, one bloom or cluster in each, five premiums	3 00	2 00	1 50	1 00	50

STRAWBERRY.—

No. 112.	Parker Earle, three premiums	$1 50	1 00	50	
No. 113.	Any varieties, gratuity.				

CHERRY.—

No. 114.	Black Eagle, one quart, three premiums	1 50	1 00	50	
No. 115.	Black Tartarian, three premiums	1 50	1 00	50	
No. 116.	Coe's Transparent, three premiums	1 50	1 00	50	
No. 117.	Gov. Wood, three premiums	1 50	1 00	50	
No. 118.	Other varieties, not scheduled, gratuity.				

VEGETABLE.—

BEET,—OPEN CULTURE.—

No. 119.	Turnip rooted, 12 specimens, three premiums	$1 50	1 00	50	

CARROT,

No. 120.	Two bunches, six in each, three premiums	1 50	1 00	50	

PEA,

No. 121.	McLean's Advancer, one-half peck, four premiums	2 00	1 50	1 00	50

Thursday, July 7.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ZONALE GERANIUM.—IN VASES.—

No. 122.	Display, not to exceed 24 vases, one truss in a vase, four premiums	$3 00	2 00	1 00	50

July Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums . . . $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D. The Secretary will furnish cards for exhibitors for writing the names of varieties, using white for edible, red for poisonous, and blue for doubtful.

No. 123. LILIUM CANDIDUM. Twelve spikes, four premiums..... 3 00 2 00 1 50 1 00

CUT FLOWERS.—DISTINCT VARIETIES.—

No. 124. Not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

GLOXINIA,—DISTINCT.—

No. 125. Four plants in bloom, four premiums 3 00 2 00 1 00 50

RASPBERRY.—

No. 126. Cuthbert, one quart, three premiums...$1 50 1 00 50

No. 127. Turner, three premiums..... 1 50 1 00 50

No. 128. Other varieties, not scheduled, gratuity.

BLACKCAP,

No. 129. Gregg, one quart, two premiums..... 1 00 50

No. 130. Mammoth Cluster, two premiums..... 1 00 50

No. 131. Souhegan, two premiums..... 1 00 50

No. 132. Other varieties, not scheduled, gratuity.

CHERRY.—

No. 133. Downer's Late Red, three premiums.... 1 50 1 00 50

No. 134. Elton, three premiums..... 1 50 1 00 50

STRAWBERRY.—

No. 135. Any variety, 24 berries, flat, gratuity.

VEGETABLE.—

PEA,

No. 136. Champion of England, three premiums.$2 00 1 50 1 00

No. 137. Telephone, three premiums..... 2 00 1 50 1 00

No. 138. Stratagem, three premiums..... 2 00 1 50 1 00

No. 139. Other varieties, not scheduled, three premiums 2 00 1 50 1 00

CABBAGE,

No. 140. Any variety, 3 specimens, four premiums..... 2 00 1 50 1 00 50

POTATO,

No. 141. Any named variety, 12 specimens, four premiums..... 2 00 1 50 1 00 50

BEAN,—SNAP—one-half peck.—

No. 142. Wax, four premiums..... 2 00 1 50 1 00 50

No. 143. Green pod, four premiums..... 2 00 1 50 1 00 50

Thursday, July 14.

CUT FLOWERS.—

No. 144.	Display, not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 145.	Basket, no restrictions, four premiums	3 00	2 00	1 00	50

PETUNIA,—WITHOUT FOLIAGE.—

No. 146.	Display, not to exceed 40 vases, one flower in each vase, four premiums	3 00	2 00	1 00	50

CURRANT.—

No. 147.	Fay, 24 bunches, four premiums	2 00	1 50	1 00	50
No. 148.	Red Dutch, four premiums	2 00	1 50	1 00	50
No. 149.	Versaillaise, four premiums	2 00	1 50	1 00	50
No. 150.	White Dutch, three premiums		1 50	1 00	50
No. 151.	White Grape, three premiums		1 50	1 00	50
No. 152.	Other varieties, not scheduled, gratuity.				

RASPBERRY.—

No. 153.	Golden Queen, one quart, three premiums		1 50	1 00	50
No. 154.	Hornét, three premiums		1 50	1 00	50
No. 155.	Other varieties, not scheduled, gratuity.				

VEGETABLE.—

CABBAGE,

No. 156.	Brunswick, 3 specimens, three premiums	$1 50	1 00	50	
No. 157.	Henderson, three premiums		1 50	1 00	50

SQUASH,

No. 158.	Summer Crookneck, 3 specimens, three premiums		1 50	1 00	50

TOMATO,

No. 159.	Any named variety, three premiums	2 00	1 50	1 00	

Thursday, July 21.

PHLOX DRUMMONDII.—

No. 160.	Display, not to exceed 30 vases, four premiums	$3 00	2 00	1 00	50

HOLLYHOCK.—

No. 161.	Not to exceed twenty vases, one bloom in each, four premiums	3 00	2 00	1 00	50

SWEET PEA,—WITHOUT FOLIAGE.—

No. 162. Display, not to exceed 40 vases, not exceeding ten flower stems in a vase, six premiums 3 00 2 50 2 00 1 50 1 00 50

BLACKBERRY.—

No. 163. Agawam, one quart, three premiums 1 50 1 00 50

No. 164. Early Harvest, three premiums 1 50 1 00 50

GOOSEBERRY.—

No. 165. One quart, of any named variety, gratuity.

PEAR.—

No. 166. D'Eté, three premiums $1 50 1 00 50

VEGETABLE.—

BEAN—(shell),

No. 167. Dwarf Horticultural, half peck, four premiums.....$2 00 1 50 1 00 50

No. 168. Any other (named) variety, four premiums..... 2 00 1 50 1 00 50

CORN,

No. 169. (Sweet), four premiums 2 00 1 50 1 00 50

POTATO,—12 specimens.

No. 170. Hebron, three premiums 1 50 1 00 50

No. 171. Polaris, three premiums..... 1 50 1 00 50

No. 172. Rose, three premiums..... 1 50 1 00 50

No. 173. Any other variety, not scheduled, three premiums..... 1 50 1 00 50

Thursday, July 28.

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 174. Twenty-four blooms, clusters, sprays, stems, or spikes, in vases, four premiums.....$3 00 2 00 1 00 50

CLEMATIS.—

No. 175. Display, in vases, three premiums.... 3 00 2 00 1 00

NATIVE FLOWERS.—

No. 176. Display in vases, no duplicates, six premiums 3 00 2 50 2 00 1 50 1 00 50

BASKET,—NO RESTRICTIONS.—

No. 177. AMATEUR,—four premiums 3 00 2 00 1 00 50

No. 178. FLORIST,—four premiums 3 00 2 00 1 00 50

APPLE.—

No. 179. Yellow Transparent, three premiums $1 50 1 00 50

No. 180. Tetofsky, three premiums 1 50 1 00 50

No. 181. Any other variety, gratuity.

PEAR.—

No. 182. Any variety, not scheduled, gratuity.

BLACKBERRY.—

No. 183. Snyder, one quart, three premiums.....$1 50 1 00 50

No. 184. Wachusett, three premiums 1 50 1 00 50

No. 185. Other varieties, not scheduled, gratuity.

VEGETABLE.—

CORN,

No. 186. Crosby, four premiums.....$2 00 1 50 1 00 50

CUCUMBER,

No. 187. Three specimens, three premiums 1 50 1 00 50

TOMATO,

No. 188. Acme, three premiums 1 50 1 00 50

Thursday, August 4.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ANTIRRHINUM,—SNAP DRAGON.—

No. 189. Twenty-four vases, not to exceed three branches in a vase, four premiums $2 00 1 50 1 00 50

GERMAN STOCKS.—

No. 190. Twenty-four vases, not to exceed three branches in a vase, four premiums 3 00 2 00 1 00 50

August Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums . . . $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D. The Secretary will furnish cards for exhibitors for writing the names of varieties, using white for edible, red for poisonous, and blue for doubtful.

CHINA PINK.—

No. 191. Collection, not to exceed 40 vases, no duplicates, four premiums... 3 00 2 00 1 00 50

APPLE.—

No. 192. Astrachan, four premiums $2 00 1 50 1 00 50

No. 193. Sweet Bough, four premiums 2 00 1 50 1 00 50

PEAR.—

No. 194. Giffard, four premiums 2 00 1 50 1 00 50

PEACH.—

No. 195. Any variety, gratuity.

VEGETABLE.—

CORN,

No. 196. Any variety, three premiums $1 50 1 00 50

SQUASH,

No. 197. Orange Marrow, three specimens, three premiums 1 50 1 00 50

No. 198. Summer Crookneck, three specimens, three premiums..... 1 50 1 00 50

TOMATO,

No. 199. Livingston's Perfection, three premiums. 1 50 1 00 50

Thursday, August 11.

CUT FLOWERS.—

No. 200. Not to exceed 24 vases, four premiums $3 00 2 00 1 00 50

GLADIOLUS.—

No. 201. Twenty vases, one spike in each, four premiums..... 3 00 2 00 1 00 50

SALPIGLOSSIS.—

No. 202. Not to exceed 20 vases, four premiums 2 00 1 50 1 00 50

APPLE.—

No. 203. Oldenburg, four premiums.....$2 00 1 50 1 00 50

No. 204. Any variety, not scheduled, gratuity.

PEAR.—

No. 205. Clapp, five premiums..... 3 00 2 00 1 50 1 00 50

PEACH.—

No. 206.	Alexander, three premiums	1 50	1 00	50
No. 207.	Beatrice, three premiums	1 50	1 00	50

VEGETABLE.—

BEAN,

No. 208.	Goddard, half-peck, in pods, three premiums	$1 50	1 00	50
No. 209.	Pole, any variety, three premiums	1 50	1 00	50
No. 210.	Pole (string), three premiums	1 50	1 00	50

SQUASH,

No. 211.	Marrow, three specimens, three premiums	1 50	1 00	50

TOMATO,

No. 212.	Beauty, three premiums	1 50	1 00	50

Thursday, August 18.

ASTER.—

No. 213.	Comet, 20 vases, one bloom in each, three premiums		$2 00	1 00	50
No. 214.	Victoria, 30 vases, one bloom in each, four premiums	3 00	2 00	1 00	50
No. 215.	POMPON, not to exceed 20 vases, one plant in each, four premiums	3 00	2 00	1 00	50
No. 216.	TRUFFAUT, — PÆONY - FLOWERED, not to exceed 30 vases, one bloom in each vase, four premiums	3 00	2 00	1 00	50
No. 217.	Any other variety than the above, not to exceed 20 vases, one bloom in each, three premiums		2 00	1 00	50

GLADIOLUS.—

No. 218.	Twenty vases, one spike in each, four premiums	3 00	2 00	1 00	50

PHLOX—PERENNIAL.—

No. 219.	Twenty vases, one head in each, five premiums	3 00	2 00	1 50	1 00	50

APPLE.—

No. 220.	Somerset, four premiums		$2 00	1 50	1 00	50
No. 221.	Williams, four premiums		2 00	1 50	1 00	50
No. 222.	Golden Sweet, three premiums			1 50	1 00	50

PEAR.—

No. 223. Rostiezer, three premiums..... 1 50 1 00 50

No. 224. Tyson, three premiums..... 1 50 1 00 50

PEACH.—

No. 225. Amsden, three premiums..... 1 50 1 00 50

VEGETABLE.—

BEAN—(HALF-PECK IN POD),—

No. 226. Horticultural (pole), three premiums... $1 50 1 00 50

TURNIP,

No. 227. Purple top, three premiums..... 1 50 1 00 50

CORN,

No. 228. (Sweet), Twelve ears, not less than 12 rows, three premiums 1 50 1 00 50

Thursday, August 25.

SCABIOSA.—

No. 229. Collection not to exceed 20 vases, not exceeding six flowers in a vase, four premiums.....$3 00 2 00 1 00 50

ZINNIA.—

No. 230. Collection not to exceed 24 vases, at least 12 varieties, one flower in a vase, four premiums..... . 3 00 2 00 1 00 50

LILIUM SPECIOSUM.—

No. 231. Twelve vases, four premiums.... 3 00 2 00 1 00 50

SWEET PEA,—WITHOUT FOLIAGE.—

No. 232. Display, not to exceed 40 vases, not exceeding 10 flower stems in a vase, six premiums..... 3 00 2 50 2 00 1 50 1 00 50

BEGONIA—(TUBEROUS ROOTED),

No. 233. Display, not to exceed 24 vases, five premiums.... 4 00 3 00 2 50 2 00 50

APPLE.—

No. 234. Sour Bough, three premiums.....$1 50 1 00 50

No. 235. Any other variety, not scheduled, gratuity.

APPLE—(CRAB).

No. 236.	Transcendent, 24 specimens, three premiums		1 50	1 00	50

PEAR.—

No. 237.	Assomption, three premiums		1 50	1 00	50
No. 238.	Petite Marguerite, three premiums		1 50	1 00	50

PEACH.—

No. 239.	Cooledge, four premiums	2 00	1 50	1 00	50
No. 240.	Foster, four premiums	2 00	1 50	1 00	50
No. 241.	Other varieties, not scheduled, gratuity.				

PLUM.—

No. 242.	Bradshaw, five premiums	3 00	2 00	1 50	1 00	50
No. 243.	McLaughlin, four premiums		2 00	1 50	1 00	50
No. 244.	Washington, four premiums		2 00	1 50	1 00	50
No. 245.	Japanese, four premiums		2 00	1 50	1 00	50

VEGETABLE.—

LIMA BEAN—Large,

No. 246.	Half-peck, four premiums	$2 00	1 50	1 00	50

CAULIFLOWER,

No. 247.	Three specimens, three premiums	2 00	1 50	1 00	

TOMATO,

No. 248.	Any variety, not scheduled, three premiums		1 50	1 00	50

SQUASH,

No. 249.	Any variety, three specimens, four premiums		2 00	1 50	1 00	50

Thursday, Sept. 1.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 250.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50

BOUQUET—(PARLOR).

No. 251.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 252.	FLORIST,—four premiums	3 00	2 00	1 00	50

September Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums . . . $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D. The Secretary will furnish cards for exhibitors for writing the names of varieties, using white for edible, red for poisonous, and blue for doubtful.

DAHLIA.—

LARGE FLOWERED,—

No. 253.	Not to exceed 20 vases, one flower in each, four premiums	3 00	2 00	1 00	50

POMPON,

No. 254.	Not to exceed 20 vases, not to exceed three flowers in each, four premiums	3 00	2 00	1 00	50

NASTURTIUM OR TROPÆOLUM.—

No. 255.	Not to exceed 24 vases, not more than six blooms in each vase, four premiums	3 00	2 00	1 00	50

VERBENA.—

No. 256.	Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

ASTER,—SEMPLES.—

No. 257.	Vase of 20 blooms, four premiums	2 00	1 50	1 00	50

APPLE.—

No. 258.	Gravenstein, four premiums	$2 00	1 50	1 00	50
No. 259.	Worcester Spy, three premiums		1 50	1 00	50
No. 260.	Other varieties, not scheduled, gratuity.				

PEAR.—

No. 261.	Ansault, three premiums		1 50	1 00	50
No. 262.	Earle's Bergamot, three premiums		1 50	1 00	50
No. 263.	St. Ghislain, three premiums		1 50	1 00	50

PEACH.—

No. 264.	Crawford (Early), four premiums.	2 00	1 50	1 00	50

PLUM.—

No. 265.	Gen. Hand, four premiums	2 00	1 50	1 00	50
No. 266.	Imperial Gage, four premiums	2 00	1 50	1 00	50
No. 267.	Victoria, four premiums	2 00	1 50	1 00	50
No. 268.	Jefferson, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

CUCUMBER—for pickles,

No. 269.	Half-peck, three premiums	$1 50	1 00	50	

CORN,

No. 270.	(Sweet), 12 ears, of not less than 12 rows, three premiums		1 50	1 00	50

PEPPER.—

No. 271.	Large Bell, 12 specimens, three premiums		1 50	1 00	50
No. 272.	Squash, 12 specimens, three premiums		1 50	1 00	50

Thursday, September 8.

CUT FLOWERS.—DISTINCT VARIETIES.—

No. 273.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50

GERANIUM.—

No. 274.	Display, not to exceed 24 vases, one truss in a vase, five premiums	3 00	2 00	1 50	1 00	50

PANSY,—WITHOUT FOLIAGE.—

No. 275	Collection, not to exceed 30 vases, one stem in each vase, four premiums	3 00	2 00	1 00	50

DAHLIA,—SINGLE.—

No. 276.	Not to exceed 20 vases, one spray in each, three premiums		1 50	1 00	50

GLADIOLUS.—

No. 277.	Display, not to exceed 20 vases, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 278.	Foundling, three premiums	$1 50	1 00	50	
No. 279.	Holden, three premiums		1 50	1 00	50
No. 280.	Wealthy, three premiums		1 50	1 00	50

PEAR.—

No. 281.	Bartlett, five premiums	3 00	2 00	1 50	1 00	50
No. 282.	Lucrative, three premiums		1 50	1 00	50
No. 283.	Other varieties, not scheduled, gratuity.				

PLUM.—

No. 284.	Fellenberg, four premiums	$2 00	1 50	1 00	50
No. 285.	Lombard, four premiums	2 00	1 50	1 00	50
No. 286.	Monroe, four premiums	2 00	1 50	1 00	50
No. 287.	Quackenboss, four premiums	2 00	1 50	1 00	50
No. 288.	Japanese, four premiums	2 00	1 50	1 00	50
No. 289.	Moore's Arctic, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 290.	Oldmixon, four premiums	2 00	1 50	1 00	50
No. 291.	Mountain Rose, four premiums	2 00	1 50	1 00	50

GRAPE.—

No. 292.	Green Mountain, three clusters, three premiums		1 50	1 00	50
No. 293.	Moore, three premiums		1 50	1 00	50

MELON.—

No. 294.	Green Flesh, three specimens, four premiums	2 00	1 50	1 00	50
No. 295.	Yellow Flesh, four premiums	2 00	1 50	1 00	50

WATER,

No. 296.	Three specimens, three premiums		1 50	1 00	50

VEGETABLE.—

CABBAGE,

No. 297.	Brunswick, three specimens, three premiums		$1 50	1 00	50

CELERY,

No. 298.	Six specimens, any variety named, three premiums		2 00	1 00	50

Thursday, September 15.

ASTER.—

No. 299.	Not to exceed 24 vases, one plant in each, four premiums	$3 00	2 00	1 00	50

CUT FLOWERS.—(BASKET).—No restrictions.

No. 300.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 301.	FLORIST,—four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 302.	Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

MARIGOLD.—

No. 303.	Not to exceed 24 vases, not to exceed three flowers in a vase, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 304.	Gravenstein, five premiums	$3 00	2 00	1 50	1 00	50
No. 305.	Maiden's Blush, three premiums		1 50	1 00	50

No. 306.	Porter, three premiums		1 50	1 00	50
No. 307.	Washington Strawberry, four premiums	2 00	1 50	1 00	50
	APPLE,—CRAB.				
No. 308.	Hyslop, 24 specimens, three premiums		1 50	1 00	50
	PEAR.—				
No. 309.	Hardy, three premiums		1 50	1 00	50
No. 310.	Durandeau, three premiums		1 50	1 00	50
No. 311.	Paradis d'Automne, three premiums		1 50	1 00	50
No. 312.	Other varieties, not scheduled, gratuity.				
	PEACH.—				
No. 313.	Crosby, four premiums	2 00	1 50	1 00	50
No. 314.	Crawford (late), four premiums	2 00	1 50	1 00	50
No. 315.	Seedlings, four premiums	2 00	1 50	1 00	50
No. 316.	Stump the World, four premiums	2 00	1 50	1 00	50
No. 317.	Other varieties, not scheduled, gratuity.				
	PLUM.—				
No. 318.	Coe's Golden Drop, four premiums	2 00	1 50	1 00	50
No. 319.	Pond's Seedling, four premiums	2 00	1 50	1 00	50
No. 320.	Reine Claude de Bavay, four premiums	2 00	1 50	1 00	50
	GRAPE.—				
No. 321.	Brighton, three clusters, three premiums		1 50	1 00	50
No. 322.	Lindley, three premiums		1 50	1 00	50
No. 323.	Massasoit, three premiums		1 50	1 00	50
No. 324.	Worden, four premiums	2 00	1 50	1 00	50

	VEGETABLE.—				
	CARROT,				
No. 325.	Any variety, three premiums		$1 50	1 00	50
	EGG PLANT,				
No. 326.	Three specimens, three premiums		1 50	1 00	50
	CABBAGE,				
No. 327.	Red, three specimens, three premiums		1 50	1 00	50
No. 328.	Savoy, three premiums		1 50	1 00	50
	CAULIFLOWER,				
No. 329.	Three specimens, four premiums	2 00	1 50	1 00	50

Thursday, September 22.

CUT FLOWERS.—

No. 330.	Not to exceed 24 vases, four premiums	$3 00	2 00	1 00	50
No. 331.	Floral Designs, in any form, other than Baskets, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 332.	American Beauty, three premiums	$1 50	1 00	50	
No. 333.	Lyscom, three premiums	1 50	1 00	50	
No. 334.	McLellan, three premiums	1 50	1 00	50	
No. 335.	Mother, three premiums	1 50	1 00	50	
No. 336.	Twenty-Ounce, three premiums	1 50	1 00	50	
No. 337.	Holland Pippin, three premiums	1 50	1 00	50	

PEAR.—

No. 338.	Louise Bonne de Jersey, four premiums	2 00	1 50	1 00	50
No. 339.	Seckel, five premiums	3 00	2 00	1 50	1 00	50
No. 340.	Superfin, three premiums	1 50	1 00	50	
No. 341.	Urbaniste, three premiums	1 50	1 00	50	
No. 342.	Washington, three premiums	1 50	1 00	50	

PEACH.—

No. 343. Any variety, gratuity.

GRAPE.—

No. 344.	Barry, three clusters, three premiums	1 50	1 00	50	
No. 345.	Concord, four premiums	2 00	1 50	1 00	50
No. 346.	Delaware, four premiums	2 00	1 50	1 00	50
No. 347.	Iona, three premiums	1 50	1 00	50	
No. 348.	Merrimac, three premiums	1 50	1 00	50	
No. 349.	Niagara, three premiums	1 50	1 00	50	
No. 350.	Pocklington, three premiums	1 50	1 00	50	
No. 351.	Salem, three premiums	1 50	1 00	50	
No. 352.	Wilder, three premiums	1 50	1 00	50	

No. 353. Any variety, not scheduled, gratuity.

VEGETABLE.—

No. 354.	Collection, not exceeding 25 varieties, four premiums	$8 00	6 00	4 00	2 00

Thursday, September 29.

CUT FLOWERS.—

No. 355. Not to exceed 24 vases, four premiums $3 00 2 00 1 00 50

No. 356. Native Flowers in vases, no duplicates, six premiums 3 00 2 50 2 00 1 50 1 00 50

APPLE.—

No. 357. Coggswell, three premiums $1 50 1 00 50

No. 358. Fameuse, three premiums 1 50 1 00 50

No. 359. Hubbardston, four premiums 2 00 1 50 1 00 50

No. 360. McIntosh, four premiums 2 00 1 50 1 00 50

No. 361. Other varieties, not scheduled, gratuity.

PEAR.—

No. 362. Bosc, eight premiums, 4 00 3 50 3 00 2 50 2 00 1 50 1 00 50

No. 363. Sheldon, eight premiums, 4 00 3 50 3 00 2 50 2 00 1 50 1 00 50

No. 364. Other varieties, not scheduled, gratuity.

GRAPE, OPEN CULTURE.

No. 365. Collection of not less than five varieties, six premiums 3 00 2 50 2 00 1 50 1 00 50

QUINCE.—Twelve specimens.

No. 366. Champion, four premiums 2 00 1 50 1 00 50

No. 367. Orange, five premiums 3 00 2 00 1 50 100 50

No. 368. Other varieties, gratuity.

VEGETABLE.—

POTATO,

No. 369. Six varieties (named), 12 specimens of each, four premiums .. $3 00 2 00 1 50 1 00

SQUASH,—Three specimens.

No. 370. Essex-Hybrid, four premiums 2 00 1 50 1 00 50

No. 371. Warren, four premiums 2 00 1 50 1 00 50

No. 372. Any variety, not scheduled, three premiums 1 50 1 00 50

CELERY,—Six specimens.

No. 373. Paris Golden, four premiums 2 00 1 50 1 00 50

No. 374. White Plume, four premiums ... 2 00 1 50 1 00 50

Thursday, October 6.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 375.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50
	Ferns,—in pots.—				
No. 376.	Collection, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 377.	Belleflower, four premiums	$2 00	1 50	1 00	50
No. 378.	Leicester Sweet, three premiums		1 50	1 00	50
No. 379.	Sutton Beauty, three premiums		1 50	1 00	50
No. 380.	Tompkins King, five premiums	3 00	2 00	1 50	1 00	50
No. 381.	Other varieties, named, not scheduled, gratuity.				

PEAR.—

No. 382.	Frederick Clapp, three premiums		1 50	1 00	50
No. 383.	Marie Louise, three premiums		1 50	1 00	50
No. 384.	Onondaga, three premiums		1 50	1 00	50

GRAPE.—

No. 385.	Diana, three clusters, three premiums		1 50	1 00	50

VEGETABLE.—

	Onion,				
No. 386.	Red Globe, twelve, three premiums	$1 50	1 00	50	
No. 387.	Yellow Globe, Danvers, three premiums	1 50	1 00	50	
	Salsify,				
No. 388.	Three premiums	1 50	1 00	50	
	Squash,				
No. 389.	Hubbard, three specimens, four premiums	2 00	1 50	1 00	50
	Endive,				
No. 390.	Six specimens, three premiums	1 50	1 00	50	

Thursday, October 13.

CUT FLOWERS.—

No. 391. In any form, gratuity.

APPLE.—

No. 392.	Fallawater, four premiums	$2 00	1 50	1 00	50	
No. 393.	Peck, three premiums		1 50	1 00	50	
No. 394.	Pound Sweet, three premiums		1 50	1 00	50	
No. 395.	R. I. Greening, five premiums	3 00	2 00	1 50	1 00	50
No. 396.	Other varieties, not scheduled, gratuity.					

PEAR.—

No. 397.	Anjou, six premiums.	4 00	3 00	2 00	1 50	100	50
No. 398.	Comice, six premiums	4 00	3 00	2 00	1 50	1 00	50

VEGETABLE.—

SQUASH,

No. 399.	Bay State, three specimens, four premiums	$2 00	1 50	1 00	50

PARSLEY,

No. 400.	Half-peck, three premiums.		1 50	1 00	50

TURNIP,

No. 401.	Purple Top Globe, four premiums.	2 00	1 50	1 00	50

WHITE EGG,

No. 402.	Four premiums	2 00	1 50	1 00	50

BRUSSELS SPROUTS,

No. 403.	Half-peck, three premiums		1 50	1 00	50

Thursday, October 20.

POT PLANTS,—IN BLOOM.—

No. 404.	Display, five premiums	$4 00	3 00	2 00	1 50	1 00

CUT FLOWERS,—IN ANY FORM.—

No. 405. Gratuity.

APPLE.—

No. 406.	Baldwin, six premiums	$4 00	3 00	2 00	1 50	1 00	50
No. 407.	Canada Red (Old Nonesuch), three premiums				1 50	1 00	50
No. 408.	Russet, sweet, three premiums				1 50	1 00	50
No. 409.	Golden Russet of Mass., three premiums.				1 50	1 00	50
No. 410.	Lemon Greening, three premiums				1 50	1 00	50

No. 411.	McIntosh, five premiums..	3 00	2 00	1 50	1 00	50
No. 412.	Northern Spy, five premiums	3 00	2 00	1 50	1 00	50
No. 413.	Palmer, five premiums ...	3 00	2 00	1 50	1 00	50
No. 414.	Roxbury Russet, four premiums..	2 00	1 50	1 00	50	
No. 415.	Collection, not to exceed ten varieties, four premiums	4 00	3 00	2 00	1 00	

PEAR.—

No. 416.	Angoulême, three premiums			1 50	1 00	50
No. 417.	Clairgeau, three premiums			1 50	1 00	50
No. 418.	Dana's Hovey, five premiums	3 00	2 00	1 50	1 00	50
No. 419.	Josephine de Malines, three premiums ..			1 50	1 00	50
No. 420.	Langelier, three premiums			1 50	1 00	50
No. 421.	Lawrence, six premiums	4 00	3 00	2 00	1 50	1 00	50
No 422.	Winter Nelis, three premiums			1 50	1 00	50

VEGETABLE.—

CELERY,—Six specimens.—

No. 423.	Boston Market, four premiums...	$3 00	2 00	1 00	50	
No. 424.	Giant Pascal, four premiums	3 00	2 00	1 00	50	
No. 425.	Any variety, not scheduled, four premiums.....	3 00	2 00	1 00	50	

TURNIP,—Six specimens.

No. 426.	White Swede, three premiums.....			1 50	1 00	50
No. 427.	Yellow Swede, three premiums			1 50	1 00	50

PARSNEP,—

No. 428.	Three premiums.....			1 50	1 00	50

Annual Meeting, Wednesday, November 2, 1898.

CHRYSANTHEMUM.

FIFTEENTH ANNUAL EXHIBITION.

Tuesday and Wednesday, November 8th and 9th, A. D. 1898.

SPECIAL RULES.

1. Exhibitors will add value to their exhibits by having all specimens correctly and legibly named, notice of which will be taken by the Judge in awarding the premiums.

2. While it is expected that Exhibitors will take pains to name their exhibits correctly, the Judge will not exclude a competitor for mistake in nomenclature.

[N. B. All the specimens placed in competition must have been owned and grown by the competitor three months.]

The Society offers the following premiums, open to competition by any one, subject to the following rule:—

Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are not members of the Society; and it is strictly required that all specimens offered for premium shall have been owned and grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least three months previous to the date of exhibition.

No. 1.	For the best six plants, large flowered, in not over ten-inch pots, distinct named varieties, four premiums	$5 00	4 00	3 00	2 00
No. 2.	From Amateurs. — For the best three plants, large flowered, in not over ten-inch pots, distinct named varieties, four premiums	$4 00	3 00	2 00	1 00
No. 3.	For the best specimen plant, large flowered, White, in not over ten-inch pot, four premiums	$3 00	2 00	1 50	1 00

No. 4. For the best Yellow, as above, four premiums....
$3 00 2 00 1 50 1 00

No. 5. For the best Red, as above, four premiums.....
$3 00 2 00 1 50 1 00

No. 6. For the best Pink, as above, four premiums.....
$3 00 2 00 1 50 1 00

No. 7. For best Vase of 20 Cut Blooms, large flowered, long stems, Pink, four premiums ...$8 00 6 00 5 00 3 00

No. 8. For best Vase of 20 Cut Blooms, large flowered, long stems, White, four premiums..... .....
$8 00 6 00 5 00 3 00

No. 9. For best Vase of 20 Cut Blooms, large flowered, long stems, Yellow, four premiums.....
$8 00 6 00 5 00 3 00

No. 10. For Vase of not to exceed ten White Blooms, four premiums.....$4 00 3 00 2 00 1 00

No. 11. For Vase of not to exceed ten Yellow Blooms, four premiums.....$4 00 3 00 2 00 1 00

No. 12. For Vase of not to exceed ten Pink Blooms, four premiums $4 00 3 00 2 00 1 00

No. 13. For Vase of not to exceed ten Blooms, mixed varieties, four premiums.....$4 00 3 00 2 00 1 00

No. 14. For twelve Sprays, distinct named, large flowering, in vases, four premiums.....$4 00 3 00 2 00 1 00

No. 15. For twelve Cut Blooms, distinct named, with long stems and foliage, in vases, four premiums.....
$5 00 4 00 3 00 2 00

No. 16. For six Cut Blooms, as above, four premiums.....
$3 00 2 00 1 50 1 00

No. 17. For the best single bloom, White, three premiums .
$2 00 1 00 50

No. 18. For the best single bloom, Pink, three premiums...
$2 00 1 00 50

No. 19. For the best single bloom, Yellow, three premiums..
$2 00 1 00 50

No. 20. From amateurs, not to exceed 20 vases, of Pompon Chrysanthemums, one spray in a vase, four premiums.....$4 00 3 00 2 00 1 00

No. 21. For best design, made of Chrysanthemums only, any green may be used, four premiums .....
$5 00 4 00 3 00 2 00

No. 22. The sum of twenty dollars may be awarded in gratuities to amateurs for meritorious exhibits of Cut Chrysanthemums.

No. 23. CARNATIONS. For best display, in vases, four premiums $5 00 4 00 3 00 2 00

No. 24. ROSES. For best display, in vases, three premiums. $6 00 4 00 2 00

No. 25. DECORATIVE PLANTS. For best collection, four premiums $10 00 8 00 6 00 4 00

No. 26. PALM. For best, three premiums $3 00 2 00 1 00

No. 27. FERN. For best, three premiums $2 00 1 00 50

The General Rules and Regulations of the Society will be in force wherever applicable. Copies will be mailed to intending competitors upon application to the Secretary of the Society.

☞ This Exhibition will be open to the public from 3 P. M. until 9 P. M., Tuesday, Nov. 8th, and from 9 A. M. until 9 P. M., Wednesday, Nov. 9.

N. B. Exhibitors are requested to make their entries the week previous. All articles intended for this Exhibition must be in the Hall, and ready for inspection by the Judge, by 1 o'clock P. M., precisely, of the 9th.

The charge for admission will be 10 cents.

ADIN A. HIXON, *Secretary.*

HORTICULTURAL HALL, 18 FRONT STREET.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1897-98.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; JAMES DRAPER, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Simeon E. King,	Millbury.
Henry Woodward,	"	Edward L. Davis,	Worcester.
John B. Bowker,	"	Henry Reed,	"
B. W. Potter,	"	Henry Phelps,	"
Frank J. Kinney,	"	Luther R. Eames,	"
Alden Rice,	"	Calvin L. Hartshorn,	"
Arthur E. Hartshorn,	"	Frederic G. Stiles,	"
George F. Hoar,	"	John Midgley,	"
George Calvin Rice,	"	Stillman H. Record,	"
Louis J. Kendall,	"	Simon E. Fisher,	"
Sylvanus Sears,	"	Lewis A. Peters,	"
William O'Connell,	"	William J. Wheeler,	"
Charles Greenwood,	"	J. Lewis Ellsworth,	"
Arthur J. Marble,	"	Frederick B. Madaus,	"
Samuel Flagg,	"	Mrs. John H. Coes,	"
Edward Hall,	"	Mrs. T. L. Nelson,	"
H. F. A. Lange,	"	Mrs. Thomas Ward.	"
Fred. H. Chamberlain,	"	Mrs. F. H. Merrifield,	"
William J. Wood,	"	Mrs. F. A. Blake,	Rochdale.

STANDING COMMITTEES.

ON FINANCE:

Fred. H. Chamberlain, 1900. George E. Francis, 1899. Nathaniel Paine, 1898.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, M.D., Joseph Jackson.

ON NOMENCLATURE:

O. B. Hadwen, George E. Francis, Albert H. Lange, Arthur J. Marble, George McWilliams, Herbert R. Kinney, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

Charles Greenwood, *Chairman.*

Frederick A. Blake,	William J. Wood,	George C. Rice,
Edward Hall,	Henry L. Parker,	Calvin L. Hartshorn,
Albert H. Lange,	James Draper,	Simon E. Fisher,
Mrs. F. H. Merrifield,	Arthur J. Marble,	Herbert R. Kinney,

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.: George McWilliams, Whitinsville.

ON FRUITS, ETC.: Henry Rich.

VEGETABLES: Charles Greenwood.

NATIVE MUSHROOMS: George E. Francis, M.D.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY.

REPORTS OF THE OFFICERS

FOR THE YEAR ENDING NOVEMBER 1, 1899,

AND

ESSAYS FOR SEASON OF 1900.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
1901.

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WORCESTER COUNTY HORTICULTURAL SOCIETY,

For the Year Ending, Nov. 1, 1899.

ANNUAL REPORT OF THE SECRETARY.

To the Members of the

Worcester County Horticultural Society:

In presenting for your consideration the Annual Report for the year just closed, I desire to refer to the weather conditions of the year. We have had a long season: six full months there were no signs of frost. The long-continued drouth, which it was thought would prove disastrous to the growers of fruit and vegetables, has been a genuine surprise. The specimens shown at our Exhibitions of Corn, Potatoes, Squashes, Beans and Cauliflower were handsome and the quality very good. The season has proved to be a very favorable one for Sweet Potatoes; J. Lewis Ellsworth showing fine specimens and of good quality; Mr. A. F. Brown of East Douglas, has grown them in quantity and as large and of as good quality as I have ever seen from the South.

This is not the usual bearing year for Apples, but at no time in an odd year has the exhibition of Apples been better than this. Pears have been fairly good and the exhibition of Seedling Peaches very fine. From three sections of the city there have been Peaches shown that were grown by children, bearing the fifth year from the planting of the stone; the size, shape, color and quality were very good. Such effort on the part of the children should be encouraged and I was pleased to find

this much interest on their part in growing and caring for trees that bore such luscious fruit.

September—Mavida Fiske, daughter of David Fiske, placed upon exhibition a quart of Prince Albert Currants.

Of Grapes, we had immense crops, the exhibitions large and the specimens shown very fine. Of Quinces, the same may be said, while it is generally claimed that Quinces yield more and are better in a year when the rain-fall is great, there has been no better showing than this season since my connection with the Society of twenty years. Currants and Gooseberries were good, with a fair crop.

The drouth commenced while Strawberries were in bloom and those who were fortunate enough to have their plants on moist or wet lands had a fairly good crop, while those on light soils were almost a failure. One of our members, Mr. Henry Rich, was situated so that he could irrigate his land and use water on his Strawberries in large quantities, the result proved the value of an unlimited supply of water, for he had as good berries in quality and quantity as one could wish for; while your Secretary at an expense for water of about one dollar and fifty cents, raised at least twenty-five dollars' worth more of berries than he would have done without the water. George McWilliams exhibited for G. Marston Whitin, a fine plate of the new Strawberry, the Talbot, a berry originating in Uxbridge, for which we awarded a Certificate of Merit last season; this, with the Record Seedling, a berry originating with S. H. Record, and shown by him the past year, I consider two very promising varieties and worthy of trial.

This has been an exceptionally fine year for Dahlias, and no complaint as to quality or quantity has reached this Society, while Sweet Peas and Asters have been nearly a failure, as in the past year or two. Nearly every day this season complaints, either personal or by mail have been received. There has hardly been a grower of this flower who has met with any success whatever, some who make no pretensions to the cultivation of Sweet Peas, more than to sow the seed and gather the blossoms they desired to use, have had quite good crops, even this year;

but such cases are rare and not numerous enough to suggest other than a general failure.

I received a letter from Rev. W. T. Hutchins, the Sweet Pea specialist, who is an acknowledged authority, suggesting that a conference be held of those who grow and are interested either for pleasure or profit, to see if some plan could be adopted whereby this disease may be cured or its ravages overcome. We decided on Thursday, August 10. In company with Mr. Hutchins, we called upon some of the growers in the forenoon. Mr. Hutchins had some theories based upon observations in other places which proved to be erroneous. The afternoon meeting was interesting, as such informal meetings generally are, but no practical remedy was suggested.

The Yellows—the disease that affects the Asters—has been prevalent this season, some growers losing four-fifths of their crop; one interesting fact is, that plants from the same lot of seed grown under glass proved healthy, while those outside were four-fifths diseased.

My attention was called early in the season to the Green Louse, which literally covered peas and beans; and before remedies were applied practically destroyed those vegetables in some gardens, and they were some of the best kept ordinarily.

Mr. George McWilliams of Whitinsville, experimented with a solution of Ivory Soap, two ounces of soap to a gallon of water; also a strong decoction of Tobacco Stems, either separate, or both together, proved effectual.

My attention was called by Mrs. P. W. Canfield, and two days later by Mr. C. B. Eaton, to a Caterpillar that was destroying the leaves of their elm trees, and while I was firmly convinced that they were the larvæ of the Elm Beetle, I was not positive, but sent the caterpillars to Amherst, and my fears in the matter were verified. I published in the papers the information I had received as to its habits and the remedy, but as this was a matter for the Parks Commission your Secretary felt that he had done all that devolved upon him and stopped there. Then again, the lawns in this city have suffered from the *Grub Worm*, that has in many instances nearly destroyed

their beauty. There seems to have been but one remedy for this evil, and that has been to spade up the grass carefully and pick them out, for any chemical so far discovered that will kill the grub will also kill the grass.

On the 21st day of September—the same as last year—the Worcester Agricultural Society, to save their State bounty, held a joint exhibition with us, and the display of fruits, flowers and vegetables was creditable to the united societies; but owing to the unfavorable weather the attendance was not as large as it should have been.

On the recommendation of your Secretary, the exhibitions usually held in the month of October were all put into one grand exhibition, which was held on the 12th day of October. It was a success; and in the opinion of our oldest members and those who have been longest identified with our Society, it was pronounced the finest display we ever had. We are indebted to Mrs. J. C. Whitin and G. Marston Whitin for their beautiful exhibit of Crotons, Caladiums, Pine Apples, Orchids and Ferns; and to Mr. Hermann F. A. Lange for his kindness in making an elaborate display of palms and decorative plants.

At one o'clock dinner was served by caterer C. S. Yeaw, at which nearly one hundred sat down. President Hadwen made a few remarks and stated that it was the fifty-fifth anniversary of the first exhibition of the Worcester County Horticultural Society. His remarks were supplemented by remarks from C. B. Knight, Samuel Hathaway, Nathaniel Paine, Calvin Hartshorn, S. A. Burgess, H. B. Watts and your Secretary.

In visiting many Grange and Farmers' Meetings during the season I have heard a great deal said about the Sutton Beauty apple. Everyone seems to want it who has not got it on his place, and I offered to provide scions for such as desired. I had calls for more than 300 setts, which have been distributed in the southerly part of this county, in Norfolk county and to some extent in Rhode Island; and I desire to thank our Mr. Geo. Calvin Rice for furnishing gratuitously the necessary scions, and also Mr. E. M. Bruce of Leominster and David Fiske of Grafton for samples of the fruit furnished me. I have

answered every demand for scions, of whatever variety that have been called for, and my thanks are due to each member of the Society who has so generously and gratuitously responded to my request for scions.

Whenever I have been solicited to furnish the children with seeds and plants in a small way I have done so, and on two occasions I have spoken to the school children on the matter of plants and their culture; they were very attentive and asked questions, which I did my best to answer. The children promised to exhibit such flowers as they grew, but with one or two exceptions they have failed to respond. I would suggest that during the winter months the boys, or such of them as so desire, be permitted to come to the Hall and be taught to graft and bud trees, and that the girls be shown how to arrange flowers and perhaps be taught some of the methods of caring properly for flowering plants; and perhaps on stated days have those from some one of the public schools, and give each of the pupils in such grades as are capable of understanding the matter instruction as outlined above. In this way we would not have so many at one time, but we could properly instruct them and give them practical lessons in such branches of horticulture as would be profitable to them in later years.

The Worcester County Market Gardeners' Association, the Worcester County Bee Keepers' Association and Massachusetts Fruit Growers' Association have held their meetings in our rooms, at which valuable papers have been read, followed by discussion. These meetings have been open to any one interested. All have tendered a vote of thanks for our hospitality. Our own winter meetings have proved interesting and were largely attended. As the essays are in print, further comment is unnecessary.

The annual meeting of the Society was held Wednesday, November 2, 1898. The meeting was called to order at 10 o'clock A. M.; President O. B. Hadwen presiding.

The records of the last annual meeting were read and approved.

Nathaniel Paine, Treasurer, read his report which was referred to the Auditors.

Adin A. Hixon, Librarian, read his report which was referred to the Committee on Publication.

Adin A. Hixon, Secretary, read his report which was referred to the Committee on Publication.

Voted, To proceed to the election of officers, a list of whom will be found on the covers of the various publications of the Society.

Voted, That the Finance Committee be authorized to borrow such sums as may be necessary to successfully conduct the affairs of the Society.

The Treasurer stated that the cash balance on hand was so small, it would be necessary to borrow money to pay premiums and suggested that payment be delayed until January 1. After some discussion it was

Voted, To pay premiums on and after December 15.

The Librarian stated that there was quite a demand for a catalogue of the Library; it was

Voted, To allow him to employ assistance if he deemed it expedient.

Voted, That the Treasurer have his report printed and ready for distribution at the annual meeting.

Upon the recommendation of the Secretary, to consolidate the October Exhibitions, it was

Voted, That the premiums usually offered during October be scheduled for one exhibition about the middle of the month, to be open from 11 A. M. until 9 P. M., and that a dinner be served. The dinner arrangements to be in the hands of the President and Secretary.

No other business offered it was voted to dissolve.

Annual Meeting of the Trustees was called immediately upon the dissolution of the meeting of the Society; President O. B. Hadwen presiding.

The first business was the election of committees and judges, a list of which will be found with the officers.

Voted, to appropriate the following sums for premiums:

Flowers and Plants, ...	$800 00
Fruit, ...	700 00
Vegetables, ...	500 00
Native Mushrooms, ...	50 00
Gratuities to persons outside of the county,	50 00

Voted, To appropriate for Winter Meetings $300.00. Hon. Henry L. Parker, Henry B. Watts, John B. Bowker, with the President and Secretary, were appointed a committee to arrange for them.

Voted, To appropriate for Library and Publications $300.00.

Voted, To dissolve.

A special meeting of the Trustees was called Thursday, April 20, 1899, at the request of the Committee on Arrangements and Exhibitions, to consider the report of said committee, recommending a Chrysanthemum Exhibition and, if favorable, to appropriate money for premiums. After considerable discussion it was voted to hold a two days' Exhibition.

Voted, To appropriate not to exceed $320.00.

Voted, To make admission free.

Voted, To dissolve.

A special meeting of the Trustees was held Thursday, July 24, called by the Secretary, to consider holding a joint Fair with the Agricultural Society, the same as last year.

Voted, To invite the Worcester Agricultural Society to hold a joint exhibition on Thursday, Sept. 21.

Voted, To dissolve.

Since publishing the additions to membership in Transactions of November 1, 1898, the following have been added:

Herbert W. Anderson, Worcester.
Mrs. Henry B. Adams, Millbury.
Effie M. Alexander, Worcester.
Mrs. George E. Barrett, "
C. F. Boyden, Leominster.
Mrs. E. M. Bruce, "
Fred. L. Chamberlain, Worcester.
Mrs. Chas. Greenwood, "
Harold J. Greenwood, "
J. H. E. Greene, "
Myra L. Hammond, "
Francis E. Jones, "
Henry E. Kinney, "
Mrs. Mary C. P. Landers, "
George D. Leavens, Grafton.
A. C. Magoon, Boylston.
William McAllister, Whitinsville.
Mrs. Dell Morgan, Worcester.
Charles E. Richardson, Boston.
Mrs. Philander Sears, Worcester.
Mrs. Henry C. Smith, "
Fred. J. Stone, Shrewsbury.
Henry W. Thayer, Worcester.
Mrs. Isabel M. Truchon, "
George F. Wall, "
Horace M. Wright, "

In conclusion, I desire to thank the officers and members for their co-operation.

Respectfully submitted.

ADIN A. HIXON, *Secretary.*

HORTICULTURAL HALL, Worcester, Mass.

November 1, 1899.

REPORT OF THE LIBRARIAN.

To the Members of the

Worcester County Horticultural Society.

The Library has been open nearly every day the past year. Special interest has been shown for books on Budding and Grafting, particularly among the young ladies.

The following Books, Periodicals, Bulletins and Papers have been added to the Library during the year:—

United States Department of Agriculture: Year Book 1894, 1895, 1896, 1897, 1898. From Frank R. Batchelder.

Special Bulletin: Beet Industry in the United States, 1897.

Bulletin: Revised Catalogue of Fruits recommended in various sections of the United States and British Provinces. By the American Pomological Society, 1899.

Library Bulletins. Accessions to the Department Library, July 1, 1898, to July 1, 1899.

Library Bulletin, October, 1898.

List of Publications relating to Forestry in Department Library.

Monthly lists of Publications, August, September, December, 1898, for sale by the Superintendent of Documents.

United States Civil Service Commission. Report, July, 1897, to June, 1898.

United States Geological Survey. Report, 1889 and 1890, Part 2, Irrigation. 1890 and 1891, Part 2, Irrigation. From Mrs. H. H. Chamberlin.

United States Commission on Education. Report. Parts 1 and 2. 1896 and 1897.

Field Columbian Museum. Report of the Director for 1897 and 1898.

Botanical Series. Part 5, Vol I.

Report Series Publication 29. Vol I., No. 4.

Lake Mohonk Conference on International Arbitration, 1899. Fifth Annual Report.

Michigan Agricultural Experimental Station. Bulletins, Nos. 162 to 174 inclusive.

Special Bulletins. No. 11, Frozen Trees. No. 12, Spraying Calendar.

Elementary Science Bulletins, Nos. 5 and 6.

Cornell University Agricultural Experimental Station. Bulletins, 152 to 172 inclusive.

Teachers on Nature Studies. Leaflets, Nos. 1 to 11 inclusive.

West Virginia Agricultural Experimental Station. Bulletins, Nos. 53 to 60 inclusive.

Massachusetts Agricultural College. Hatch Experimental Station. Bulletins, Nos. 54 to 61 inclusive.

Meteorological Observatory. Bulletins, Nos. 119 to 128 inclusive.

Massachusetts Board of Agriculture. Report, 1898. William R. Sessions, Secretary. Twenty copies for distribution.

Massachusetts Crop Reports. Bulletins, Nos. 1 to 6 inclusive. Series of 1899.

Massachusetts Board of Agriculture, Rooms 134, 135 and 136, State House, Boston. Catalogue of Library, January 1, 1899. Frederick H. Fowler, Librarian.

Massachusetts Horticultural Society. Transactions. Part 2, 1898.

Massachusetts Fruit Growers' Association. Report, 1899.

Parks Commission, Worcester. Report, November 30, 1898.

Worcester Society of Antiquity. Bulletins, Nos. 7, 8, 9, 10, 11.

Experimental Station Accuracy. Correspondence between Prof. W. P. Brooks and Andrew H. Ward.

Relative Merits of Soda and Potash.

Nature Study. Biology Series. C. F. Hodge, Clark University. Leaflet, No. 1, Common Toad. No. 2, Our Common Birds.

Flora of Lake Quinsigamond. Prof. George E. Stone. 1899. Massachusetts Agricultural College.

Microscopic Fungi. 1898. M. C. Cook.

Moulds, Mildews and Mushrooms. Prof. Lucien Marcus Underwood, Columbia College. 1899.

Wood and Garden. Illustrated. 1899. English. Gertrude Jekyll.

Revue Horticole. French. 1898.

Moths and Butterflies. Illustrated. S. F. Denton. Sections 5 and 6.

The Cultivator. New Series. 1845. Vol. 2. From American Antiquarian Society.

Plant Breeding. 1897. Prof. L. H. Bailey, Cornell University.

Forcing Book. 1897. Prof. L. H. Bailey, Cornell University.

Evolution of our Native Fruits. 1898. Prof. L. H. Bailey, Cornell University.

Principles of Agriculture. 1898. A text book for Schools and Rural Societies. Prof. L. H. Bailey, Cornell University.

Principles of Fruit Growing. 1898. Prof. L. H. Bailey, Cornell University.

Lessons with Plants. 1898. Prof. L. H. Bailey, Cornell University.

Garden Making. 1899. Prof. L. H. Bailey, Cornell University.

Pruning Book. 1899. Prof. L. H. Bailey, Cornell University.

Bush Fruits. 1898. Prof. Fred. W. Card, Rhode Island Agricultural School.

How to Build a Home. 1897. Francis C. Moore.

Botany. 1898. Julia MacNair Wright.

Flowers. How to grow. 1899. E. B. Rexford.

Among Rhode Island Wild Flowers. 1896. Prof. William Whitman Bailey, Brown University.

New England Wild Flowers. 1897. Prof. William Whitman Bailey, Brown University.

Landscape Gardening as applied to Home Decoration. 1899. Prof. S. T. Maynard, Massachusetts Agricultural College.

Horticulturist Rule Book. 1899. Prof. L. H. Bailey, Cornell University.

Greenhouse Management. 1898. Prof. L. R. Taft, Michigan Agricultural College.

The Soil. 1899. Prof. H. King, University of Winconsin.

Fertility of Land. 1899. Prof. I. P. Roberts, Cornell University.

The Nursery Book. 1897. Prof. L. H. Bailey, Cornell University.

Fertilizers. 1898. Prof. E. B. Voorhees, Director of the New Jersey Agricultural Experiment Station.

How to plan the Home Grounds. 1899. Samuel Parsons, Jr., Ex-Superintendent of New York Parks.

Spraying of Plants. 1897. Prof. E. G. Lodeman, late of Cornell University.

Inaugural Address. Rufus B. Dodge, Jr., Mayor of Worcester, January 3, 1899.

Worcester Directory.

American Florist.

American Gardening.

Country Gentleman.

Florist Exchange.

Gardening.

New England Homestead.

Massachusetts Ploughman.

Meehan's Monthly.

Rhodora.

Rural New Yorker.

State Board of Health Bulletin, Nashville, Tennessee.

Worcester Daily Spy.

Worcester Daily Telegram.

English:

Agricultural Gazette.

Garden.

Gardener's Chronicle.

Gardening Illustrated.

Respectfully submitted.

ADIN A. HIXON, *Librarian.*

HORTICULTURAL HALL.

November 1, 1899.

REPORT OF THE TREASURER.

NATHANIEL PAINE, Treasurer, in account with
WORCESTER COUNTY HORTICULTURAL SOCIETY.

DR.

1898.			
Nov. 1.	Cash balance as per last report,		$ 239.94
1899.			
Nov. 1.	Receipts to date:		
	From rent of stores,		6,399.96
	" rent of hall,		3,303.60
	" membership fees,		66.00
	" Chrysanthemum exhibition,		37.90
	" sale of tickets for annual banquet,		115.00
	" interest on deposits,		12.97
	Money borrowed,		14,700.00
	Interest from Savings Bank deposit,		55.00
	Total,		$24,930.37

CR.

1899.			
Nov. 1.	Payments to date:		
	City taxes and water bills,	$ 856.55	
	Premiums paid,	2,394.18	
	Paid judges of exhibits,	150.00	
	for gas,	652.41	
	A. A. Hixon, salary as secretary,	200.00	
	A. A. Hixon, as librarian, &c.,	1,000.66	
	treasurer,	150.00	
	janitor,	458.32	

Nov. 1.	Interest on Sav. Bank loan,	445.00	
	" " temporary "	204.51	
	For coal,	187.01	
	" repairs,	113.49	
	" printing,	104.13	
	" books and periodicals,	39.74	
	U. S. Collector for license,	75.00	
	Insurance,	21.00	
	Account of annual banquet,	203.55	
	Incidentals, including telephone, and sundry hall expenses,	463.38	
	Loans paid,	16,550.00	
	Deposited in Savings Bank,	55.00	
	Total,	$24,323.93	
1899, Nov. 1.	Cash balance,	606.44	
			$24,930.37

THE FRANCIS H. DEWEY FUND.

1898, Nov. 1.	Balance of fund,	$1,125.05	
1899, Nov.	Interest to date,	45.00	
			$1,170.05
	Paid for books,		10.00
1899, Nov. 1.	Present amount of fund, invested in Savings Bank,		$1,160.05

THE WILLIAM EAMES FUND.

1898, Nov. 1.	Amount of fund,	$500.00
1899, Nov. 1.	Interest to date,	10.00
	Present amount of fund, invested in Savings Bank,	$510.00

NATHL. PAINE, *Treas.*

November 1, 1899.

WORCESTER, 1899.

We the undersigned, Auditors of the Worcester County Horticultural Society, hereby certify that we have this day examined the account of the Treasurer, and find the same to be correct and properly vouched, and that the cash balance is accounted for.

HENRY L. PARKER.
FREDERIC H. CHAMBERLAIN.

TRANSACTIONS

OF THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY.

ESSAYS

FOR SEASON OF 1899.

Worcester, Mass.
PRESS OF CHARLES HAMILTON.
311 MAIN STREET.
1900.

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WORCESTER COUNTY
HORTICULTURAL SOCIETY.

5th January, A. D. 1899.

ESSAY

BY

O. B. HADWEN, President.

Subject:—Review of Horticulture.

It is a significant fact that the winter meetings and summer exhibitions keep the members in touch with the advancement of Horticulture.

The Society's Library of upwards of 3000 volumes is the second largest in Massachusetts. The books are among the costliest and most valuable upon Horticulture, and have proved of inestimable value to members. The library is also well supplied with weekly and monthly publications of this and foreign countries. Horticulturally speaking, the library is full of leaves abounding with fruit and flowers.

In its earliest history it was kept in the office of Anthony Chase, subsequently in the office of Clarendon Harris, and, in 1852, was removed to its present location in Horticultural Hall.

The Society was organized in 1840 and received its act of incorporation in 1842. The first exhibition was October 13, 1840, largely through the efforts of William Lincoln, and it proved as great a novelty as it did a great success.

Of those who were recorded as exhibitors, Andrew H. Green is the only one now living.

The succeeding exhibitions were migratory until the completion of Horticultural Hall. When incorporated the Society was

permitted to hold real estate to the amount of $1500, and personal property to the amount of $2000. Until 1850 the amount of funds received was $3611.52.

By the will of Hon. Daniel Waldo the Society was left $3000, and with the funds the land was bought on Front street for $6847.30, and the building erected for $11,278.25, making the total cost $18,125.65. The building has twice been altered and improved, at nearly double its original cost, until it is now adequate for all the needs of the Society. I am the only person living who contributed to the exhibition in 1841, also who attended the meeting at the office of Anthony Chase, County Treasurer, when the committee was chosen to buy the land and build Horticultural Hall. The members were Stephen Salisbury, Frederick W. Paine, William M. Bickford, William T. Merrifield, William Workman, Horatio N. Tower and D. Waldo Lincoln.

Lieut. HATHAWAY.

I certainly did not come here as a speaker, but as a listener. Horticulture, to your President, is like a school-book which he has learned from cover to cover. I stand here as one of the two living charter members of this Society. I feel that I have done something for this Society. That is, in the decoration of the window trimmings of this building. I was then engaged in terra cotta work, and these beautiful window trimmings were designed especially for this building. As you have probably noticed, they are a combination of fruits and flowers. I wish I could speak to you with the vigor that two-score years would give a man, but which four-score years will not allow a man to carry. Who can tell what makes the seed to grow? It is dropped into the bosom of the earth, and in a short time springs up and bears beautiful blossoms. So it will be with us. We will be laid in this earth only to rise up in the earth of immortality.

Rev. Mr. KENT.

You can take a minister by surprise sometimes, and your President has certainly taken me by surprise. I do not feel like talking to you on Horticulture when there are so many gentlemen here who can talk to you so much better than I can. In giving my talk on roses I only spoke of their relations to me. I had a dozen of my boys learn to solder, so that when their mothers' kettles needed mending they could solder them. When I lived in Illinois, there was a young man who came to take charge of a church there. It was a village with about 400 people and 600 pigs. The pigs and the people seemed to be very friendly with one another, they certainly shared the same door-yard. Well, when this young man came, he started a little garden in the door-yard. I believe that his flowers did more good and saved more souls than his preaching did. The next year the women wanted to make their door-yards look pretty, and commenced to build fences to keep the pigs out. The people improved very much after they ceased to associate with the pigs. And so your Society, by its exhibition of flowers, has done much to elevate the people.

EDWARD W. BREED, Clinton.

As we review Horticulture for the past few years, we find there have been many valuable additions made, although, in many instances, new varieties only serve to adorn catalogues. Their chief value lies in the fact that they are novelties.

There are, however, many desirable acquisitions, from which I have selected the following:

Trees.

Cornus Florida Rubra.—The flowers of this variety are a deep rose-color and are freely produced. The tree is a fit companion for the white flowering dogwood.

Larix Kaempferii.—This is a Japanese variety that makes a slow dense growth with light soft-green foliage. While it is not

as hardy as our larch, it is nevertheless worthy of our attention, and we should give it some slight protection.

Bechtel's Double Flowering Crab.—This is one of the most beautiful of the dwarf flowering trees. It blooms freely when quite small, and has flowers that are very fragrant and bright pink in color, intermixed with white.

Populus Alba Nivea.—This tree is an improved form of the white or silver poplar and very beautiful for the lawn, with the underside of its leaves white as snow.

Shrubs.

Berberis Neubertii.—This is a very attractive form of barberry, having holly-like leaves. It is a grand addition to this valuable family.

Deutzia Lemoinei.—The flowers of this variety are two-thirds longer than the well-known Gracilis, and when in bloom, cover the plant thickly. It is as well adapted for forcing as for planting in the garden.

Vibernum Tomentosum.—This is the single form of the Japanese snowball, and is said to be the finest variety of the Vibernum family. A little protection is advisable when the plants are small.

Philadelphus Avalanche.—This is a dwarf flowering form of the old-fashioned syringa. It has weeping branches, and when in bloom, resembles a fountain. Its flowers are pure white and fragrant.

Stephenandra Flexuosa.—This is a new shrub from Japan, of low, dense growth, having deeply cut foliage that is the attractive feature of this shrub.

Ligustrum Ibota.—The above is a Japan privet, having dark, oval foliage and graceful habit. It has white fragrant flowers.

Lilacs.—Among these there have been a great many valuable additions that give this old-fashioned shrub a prominent place in the gardens of today.

Roses.

Marchioness of Londonderry.—This is a new ivory white hybrid-perpetual; the flowers of very great size, carried on

stout stems. It is free flowering, highly perfumed, and one of the finest of the roses.

Mrs. R. G. Sharman Crawford.—This is deep rosy-pink in color, with outer petals shaded with pale flesh. It is a free bloomer all the summer.

This variety and the preceding one were awarded gold medals by the National Rose Society of England.

Margaret Dickson.—This is a magnificent rose—white, with pale flesh centre, and very fragrant.

Clio.—The flowers of this variety are large, of fine form, flesh color, shaded in centre with rosy pink. It has handsome foliage and is a vigorous grower.

Mad. Georges Bruant.—This has single white flowers with very pointed buds. The foliage of the new growth is very bright and contrasts prettily with the older growth. It is a free bloomer and well adapted for planting with Rugosa varieties, with which it is closely allied.

Liberty.—This is a hybrid tea-rose and is to be put on the market in the spring of 1900.

Its originator claims for it all the desirable qualities that a rose should possess, and whenever it has been exhibited it has attracted marked attention. Its color is like Meteor at its best.

Ramblers.—Among other varieties of roses the Ramblers deserve special mention, and among them the Crimson rambler is the most desirable. It is of climbing habit and can be grown in a variety of ways. It is of Japanese origin and is universally admitted to be the greatest rose novelty of recent years. It is perfectly hardy.

Wichuriana Hybrids.—This rose and its hybrids are valuable additions with their single and double flowers and rich glossy foliage. For a ground carpet or for trailing to any object, they are very desirable.

Lord Penzance's Sweet Briar Hybrids.—The foliage of these is deliciously scented, and the flowers are single and of the most beautiful kinds.

Herbaceous Perennials.

Campanula, Pericifolia Alba.—These have beautiful white bell-shaped flowers. They are useful for garden or pot culture as decorative plants.

Anemone, Lady Ardilaun.—A very robust form of Japonica Alba, having massive foliage. It is a more vigorous plant.

Hollyhocks, Alleghany.—A new strain, claimed to be superior to old forms. The flowers are large, delicately fringed, and beautiful in color.

Gaillardia, Grandiflora Compacta.—This has very showy red and yellow flowers, single, and continuously in bloom. They are useful for cut flowers. It has a more compact growth than the old form.

Rudbeckia, Golden Glow.—As this has been so universally grown during the short time since it was introduced, we need to say no more than that it is a valuable addition to our hardy plants.

Tender Plants.

Begonia, Glorie de Lorraine.—This plant is probably the most valuable addition to house plants that has been introduced for many years. Its beautiful pink flowers almost hide the foliage and give it the appearance of a bouquet.

Begonia, Tuberous—Duke Zeppelin.—This tuberous rooted begonia is a variety that will stand the sunshine. It makes a very showy appearance with its dazzling scarlet flowers.

Acalypha Sanderii.—This is a plant having such peculiar tassel-like flowers that it has been called the chenille plant. It well describes the flowers.

Adiantum Lathomi.—This plant is similar in appearance to the valuable Farleyense, but is of easier culture, and well adapted for house use.

Asparagus Sprengeri.—This is a vigorous grower and very useful as a green for arranging with cut flowers.

Carnation. Mrs. Thomas Lawson.—This has a very large flower of a bright carmine pink. The fabulous price paid for

this new variety attracted more public notice through the press than the advent of any other variety yet produced.

With these additions to our long list of valuable plants we need not lack variety.

Further remarks were made by David Fiske of Grafton, George McWilliams of Whitinsville, H. B. Watts of Leicester, Herbert R. Kinney, Henry Reed and Secretary Hixon of Worcester.

12th January, A. D. 1899.

ESSAY

BY

AARON LOW, Hingham.

Theme:—Vegetables.

Mr. President:—When your Secretary wrote to me that your Society wished me to give you a paper upon Vegetables, I thought that he had selected a very comprehensive subject; a subject that to the market gardener is of great importance, for at the present time if he desires to be in the front rank, he must ever be on the alert to cater to the whims and fancies of his customers in supplying them with such varieties of vegetables as they wish for.

The market gardener of forty or fifty years ago had a very simple task, to supply the demands of customers, as the number of varieties in cultivation were but few, and these mostly of the old standbys. Since that time, there has been developed and brought into general use many new vegetables then unknown.

Among the vegetables used or grown fifty years ago, Rhubarb was but little known. Now it is one of our best paying early spring crops, of easy and simple cultivation, producing as it will quite a number of tons yearly per acre, when well established and on early land; selling at good prices. The Giant and Victoria are both good varieties, having large, stout stalks, and are both rapid growers.

Asparagus is another vegetable, the demand for which has rapidly increased during the last twenty-five or thirty years. As one of our early spring crops, this must be reckoned as among the most profitable. When well established, it can be cropped for many years, giving good returns, as the demand is usually

equal to the supply. This crop can be well grown by the annual application of chemical manures. A good fertilizer would be 500 lbs. Fine Ground Bone, 300 lbs. Muriate of Potash, and 200 lbs. Nitrate of Soda.

Lettuce has largely increased in consumption, and as grown under glass is a very important crop. Large amounts are yearly sent from Boston and vicinity to New York markets, and has usually paid a good profit.

For a few years past, the out-of-doors lettuce grown in Florida has been an important factor in lowering prices of lettuce grown under glass at the North.

White Seed Tennis Ball, Big Boston, and New York are all excellent varieties.

The market gardener who can have a few acres of early Cabbages ready for market ahead of his neighbors, usually finds it to be a very paying operation, as the land can be utilized for a second crop of Celery or Squashes, and the cost of production of the second crop materially lessened.

The best early varieties are Early Spring, Early Peerless, All Head, and Succession.

For a few years past, there has appeared in New York, Philadelphia and Chicago markets in the spring of the year, a variety of cabbage imported from Europe which brings a much higher price than any variety of cabbage offered of American growth.

This variety forms a good sized, very solid head, and is a much better keeper than any of our native varieties. This cabbage is sold under a number of different names: Danish Ball Head, Hollander, and Solid Emperor. On testing the above varieties, I found them all of apparently the same kind. Without doubt it is one of the best kinds for the main crop. A barrel of this cabbage will weigh a third more than the best of our American kinds.

Since the War of the Rebellion, there has developed in the southern section of our country, an industry of great importance in growing vegetables to send to the Northern markets in the winter season, so now fresh vegetables can be had on our tables almost every day in the year. Previous to the War there was

but little competition between southern and northern grown vegetables, but since then, it has had a very important bearing on the market gardening of the North, lessening the demand, and also lowering the prices previously obtained.

Green Peas and String Beans are shipped North in large quantities during the winter months, and when the home grown supply comes in the demand has become small.

The same conditions apply to most varieties of vegetables, as the extent of our country is so large, that while the northern section is covered with snow, and under the grip of the Frost King, the southern section is producing the luscious strawberry and other seasonable fruits and vegetables. Although grown thousands of miles away, the improved methods of transportation deliver them at our doors, apparently as fresh as when picked from our own vines, or gathered from our own gardens. The above condition of things the market gardener of the North is obliged to confront, and one of the most important problems of the future is its successful solution.

Another important factor within a few years has entered into the production of vegetables,—the canning industry. Thousands of acres are annually grown solely to supply the canning factories. Perhaps the two most important vegetables grown for that purpose are the Tomato and Sweet Corn. Many of those present doubtless remember the first appearance of the Tomato in our markets. Some forty-five or fifty years ago a neighbor came to me one spring morning and wanted to know if I would not send with him to Boston and buy a dozen of tomato plants. He said he did not want more than a half-dozen and thought I might want the rest. We sent and got them, and I think they were about the first tomato plants set out in the town.

There was not any demand in the market for Tomatoes, but an increasing demand to try them. The following spring I commenced growing the plants in hotbeds. The demand rapidly increased, and in a few years I had to grow many thousands of plants to supply the call for them. The demand for Tomatoes in the open market rapidly increased, the first brought in selling

from $6.00 to $8.00 a bushel, and seldom going below $1.00 for the later or main crop.

No vegetable has been more rapidly improved than the Tomato. On its first appearance the fruit was rough and ill-shaped, so that a large part had to be thrown away in preparing it for the table. The rapid increase in the demand for Tomatoes was without precedent. It sprang at once into universal consumption. New and improved varieties were introduced, larger in size, smoother in shape, and earlier in ripening. Its cultivation rapidly extended over the entire country, and at the present time, in the southern part, it is considered as one of the most important crops grown.

Varieties have mutiplied almost indefinitely; and among such a large number of different kinds, many of which are of great excellence, it is not difficult to select a half-dozen adapted to all sections and markets.

Some markets give the preference to the pink tomatoes, others to the bright red varieties. If I was to select, judging from my own experience, varieties the best adapted for market and home use, I should name the following kinds: Early Comrade, New Imperial, Perfection, Essex Hybrid, Dwarf Aristocrat, Dwarf Champion, May's Favorite, and New Stone.

Second in importance to the Tomato, especially to the canning industry, is Sweet Corn. Not only has the demand in the market largely increased, but thousands of acres are annually grown to supply the canning factories, and if desired, sweet corn can be had, of first quality in sweetness and flavor, for table use, the entire year. Many varieties are in cultivation, but for all practical purposes, a few kinds still stand at the head of the list. As a variety for both purposes, canning and table use in its green state, Early Crosby ranks the highest. This has a good sized ear, kernel very sweet and tender, and although not growing a large stalk, is productive in the essential point of good ears.

As a later variety, Potter's Excelsior ranks high, both in quality and productiveness. As a still later variety, with larger ears and kernels of luscious sweetness, Stowell's Evergreen fills the bill. There are many other kinds of marked excellence, but

for a succession from first to last, the three named will give perfect satisfaction.

Judging the importance of any vegetable in its value as an article of food to the world, we must accord to that grand old vegetable, the Potato, a very high place. For is it not speaking within bounds to say, that hardly a day passes but it is in use upon the tables of the rich and poor alike?

I do not believe that there is any other vegetable so universally grown by every farmer in the land, or which holds a higher average in his crops, than the potato.

The farmers of fifty years ago had but few varieties in cultivation. The old Long Red, Orange Yellow, Jackson White, and Blue Nose, were the principal kinds then known.

On the advent of the Early Rose Potato a new impetus was given this vegetable. The unparalleled success of this new variety, combining as it did earliness, great productiveness and first-class quality, placed it at once at the head of all known varieties.

The great advance of this variety infused into the hearts of all seedsmen an earnest desire to bring out other new kinds, which should if possible surpass the merits of this wonderful variety. Many new kinds were introduced, some of much merit, but the Early Rose still holds the prestige of being one of the very best in quality and productiveness.

Among the many valuable varieties introduced since the Early Rose, Beauty of Steben, New Queen, Early Essex, Clark's No. 1, Carman No. 1, and Carman No. 3, and Early Fortune are the most desirable. As indicating the great magnitude of potato growing in this country, I received a communication a few days since from a large Western seed firm, stating that they sold the past year 87,500 bushels of potatoes for seed purposes.

In some sections of the country Squashes are largely grown, especially in the vicinity of large canning establishments, as the squash ranks in the amount of product put up as one of the largest. Quite an important point in growing squashes in our section is to utilize the land used for early cabbages, peas, and early potatoes, in growing this as a second crop, planting them

at the last hoeing or by the middle of June. As large a crop can often be grown by this method as if no other crop had preceded it.

When I first introduced the Essex Hybrid Squash, a friend came twenty miles to get seed enough to plant an acre, then planted to early potatoes. He grew upon that acre 400 bushels of potatoes, and as a second crop nine tons of Hybrid Squashes, and received first premium on both crops from the Essex County Agricultural Society.

The only labor performed on the squash was sticking these seeds into the side of the rows ten feet apart, and hoeing them once when he dug the potatoes. Another market gardener of Dedham, after taking off a crop of Early Turnip Beets from one-half an acre, planted it to Hybrid Squashes the last of June, and informed me in the fall that he grew eight tons on the half acre, and that almost the entire lot were handsome, good sized, marketable squashes.

In thus growing two crops the same season, of course the land must be well manured and in good condition, and it is well to use for the second crop some active nitrogenous fertilizer to give the plants a rapid growth, as upon a strong, vigorous growth at first depends your success.

Perhaps the Essex Hybrid is the best variety to plant for the second crop, as it is of rapid growth and quick maturity.

Of the many kinds of squashes now in cultivation, the Boston Marrow, Dunlap's Prolific Marrow, Bay State, Essex Hybrid, Warren, and Hubbard are the most desirable.

In the vicinity of the large cities, growing of the melon crop is often very profitable by starting the plants under glass or in hotbeds and transplanting them to the open ground the first week in June. Those who have warm, early land will often find the melon crop giving as large a profit as any. Melons can be planted in the open ground from the 25th of May until the 10th of June, and, if a favorable season, will give good returns for your labor. A few years since I planted half an acre on the 8th of June, following a crop of spinach. The amount grown on the half-acre was 200 boxes of very nice melons, and were

sold at an average price of $1.25 a box. The varieties grown were Orange Christiana, yellow flesh, and Extra Early Hackensack, green flesh,—two excellent kinds.

Within a few years there has appeared a number of new melons, which seem to be superseding the old well-known kinds in many of the large markets. Prominent among these new varieties I will name the Colorado Gem, Paul Rose, Rocksport, and last, "Nectar of Angels." The last named certainly ought to be the best of all, and I shall try it the coming season.

The Colorado Gem wherever known has been in great demand, as although small in size in quality it ranks the highest. Of the older varieties, Montreal Nutmeg, Extra Early Hackensack, and Arlington, of the green flesh, and Orange Christiana, Tip Top, Millar's Cream and Emerald Gem, of the yellow flesh, are all choice, and will give satisfaction to all.

Celery is another vegetable that has largely increased in cultivation within the last twenty years. Where formerly it was grown in small acreage, it has now become an important crop to many market gardeners living near large cities. A market gardener living near Boston had sixty acres in celery the past year, and a number of others from twenty to thirty acres.

Many large gardeners who have land adapted to growing onions, when sowing the onions, omit every sixth row, and later set that out with celery plants. The onions maturing by September are taken off, and the remainder of the season the land is devoted to celery. The old varieties of celery had to be banked up when growing to properly blanch the stalks, to render them fit for table use. A few years ago a variety was introduced from Europe named Golden Self Blanching, which proving very desirable as not requiring the extra labor of banking has largely superseded the old varieties in cultivation.

The onion upon land adapted to its growth, and when sufficient help could be obtained to perform the cultivation necessary, was formerly a very paying crop. Now the sharp competition of onions grown on the fertile lands of the West, with which our markets are overstocked, renders this crop one with but a small margin for profit. This crop is one which

requires a large outlay for sufficient fertilization to carry the crop to maturity, and which has to have as large a cost for labor in weeding, harvesting, and preparing for market. It can only be grown where plenty of cheap labor can be had just at the time when it is needed. This crop is not as universally grown as most of those I have called your attention to.

Mr. President:—

There are various other vegetables which I should be pleased to notice if time permitted, but as I have briefly brought to your attention most of the prominent ones in general cultivation, and believing as I do that the principal object of the papers read at our Farmers' Clubs and Institute meetings should be to call out the ideas and practice of those present, I trust that all will freely criticise any point brought out, giving their own ideas and practice in relation thereto; by so doing, our meeting can be profitable and instructive to every one present.

19th January, A. D. 1899.

ESSAY

BY

JOHN FARQUHAR.

Theme:—Our New Possessions—Hawaii.

Illustrated by Stereopticon.

THE most momentous question before our administration, at present, is the annexation of certain sections of the globe that have recently come under our control. I am not a politician in the popular sense of the word, although I never hesitate to vote as my conscience dictates. I have been invited to address you regarding the most momentous of these recent annexations—the Hawaiian Islands. There can be no question but what this is a valuable annexation, being so near our western coast. They are the nearest land from Portland and Seattle, and afford excellent protection to our western coast against rival powers. It is five days' sail from San Francisco, Seattle and Portland. Aside from the situation, I want to show you, ladies and gentlemen, that we have in these Hawaiian Islands valuable territory. I would say here that when I come to a Horticultural Society I mean to speak only on horticulture, but, on the present occasion of speaking before this Society, I thought it might be gratifying to say something aside from horticultural interests. I shall endeavor in this address to omit nothing which might be of horticultural interest.

The voyage to Honolulu occupies nine days, really ten, but in going west as you cross the one hundred and eightieth meridian you live one day over twice, and coming east you drop one day. I took passage on the Oriental Steamship line,

which I found much inferior in speed and accommodations to the Canadian and Pacific line. The smooth seas and warm temperature made a pleasant voyage. The average temperature of this section of the world is 82 degrees. One very pleasant feature of the voyage is the swimming tank. It is a very large bag into which is pumped 25 gallons of sea water.

We see to the north of us Bird Island. Thousands of birds make their home in this island. There lies to the north the island of Lasage. These are now under our flag. They produce large quantities of guano, and ship it to Honolulu, and it also has a large trade in eggs. There are over twelve small islands of like character attached to the western group, and the only business carried on is the gathering of guano.

The most important island of the Archipelago is Oahu, on which Honolulu is situated. This island is 300 miles in length and 600 miles in breadth. Its population is 40,000, of which 30,000 reside in Honolulu. The next in importance is Hawaii, with an area of 4200 square miles and a population of 43,000. Kauaii is third with an area of 760 square miles and a population of 10,000. Hawaii holds preëminence and is the seat of government.

The harbor of Honolulu is the finest in the group, and owes its existence to the coral reef. It is the only harbor on these islands to which a steamer can make fast to a dock. Immediately upon a steamer's arrival it is met by a crowd of boys, who invite the passengers to throw coins and see them dive. When one is thrown they dive for it, and place it in their mouth, and call for more, until soon the cheeks of the lads bulge out with coins.

The Hawaii Islands boast of few hotels. I was directed to the Arlington and reached there about five o'clock in the afternoon, registered, and proceeded at once to the post-office. To my amazement I found that office closed at four o'clock. I had nothing to do but wait until the next morning. I was very anxious for mail, having been without it for four weeks. Eight o'clock had hardly struck before I was standing at the post-office; five minutes past and still it remained unopened; then,

fifteen minutes elapsed and still the crowd increased; twenty-five minutes past, and there must have been at least 150 persons waiting. At twenty-eight minutes past the door opened, and one clerk proceeded to give out the mail. I got mine at 9.45. From this you can get some idea of the management of the office. I had some photographs to send away. I inquired at the stamp window for the proper postage, and was told that it would be two cents. I gave the two cents in payment, and the clerk said, "We do not take coppers, nothing less than five cents."

Next I proceeded to ascend Punch Bowl, along a good carriage road to this long extinct crater. This view shows the inside of the crater. The carriage road leads around the mountain, from which one gets a view of the harbor. It is divided from the ocean beyond by the extensive coral reef. To the east of Punch Bowl are two beautiful valleys, in both of which are many beautiful residences. This valley is really the crater of an extinct volcano. Along this valley are palms and Night Blooming Cereus.

This is the home of Sandford Doane, who held a government position for five years, and was instrumental in bringing about the annexation of Hawaii. The residence of the ex-queen has been here since 1893. Near here are a company of United States troops, who are stationed in the rear of the palace. The raising of our flag over this building took place three weeks before I arrived. Among the crowd was great enthusiasm, and many were moved to tears. It is well known that the Japanese wanted to annex Hawaii, and it was only on account of negotiations with the United States that they were prevented from accomplishing their end.

The natives are well developed physically; are tall, broad-shouldered, kind-hearted and serious. They are very fond of horseback riding, ladies as well as gentlemen.

The population of this new territory is 117,000, divided as follows: Natives, 39,500; Japanese, 28,000; Chinese, 26,000; Portugese, 15,000; Americans, 2,500; British, 1,500; and the rest foreigners. There are 3,000 United States troops stationed

at Honolulu under a building at the market-place, which is simply a steel framework.

At the market-place are displayed all of the vegetables and fruits which could be found in this country. There are over seventy kinds of fish, from the shark to the shrimp. The mullet is the most appetizing. Some of the fish are very repulsive looking. The Chinese preside over the vegetable stores. Here are found turnips, potatoes, carrots, parsnips and strawberries. These grow on elevations of three or four hundred feet. Women as well as men sell in the market-places. One woman was sitting outside of a building opposite her store. Hardly had I taken this picture before she darted across the street, and proceeded to cut deftly a section of meat for a waiting customer.

Flowers grow abundantly, and the natives are passionately fond of them. The flowers are not made into bouquets but in long wreaths, and are worn around the neck or over the shoulders. It is customary to present to a friend going on a journey two of these wreaths. When the steamer leaves the dock he throws one to his friends on shore and keeps the other as a souvenir.

This shows a picture of a steamer on which we are to go to San Francisco.

We have here a wall made of coral rock.

This is one of the principal streets, bordered on either side by Royal palms.

Taking one of the cars on the street which we have just looked at we ride out on King street, where we see some of the troops fishing under large trees. They asked me to take their pictures to send home to their friends. This street is approached by rows of Date Palms, which lead through a grove of Cocoanut trees and Giant Fern trees. These are exceedingly beautiful. These fern trees almost conceal the residence of the Prince.

I was invited to a native feast. The distinctive feature of this feast is roasting of pigs. The pigs are roasted over hot sticks. They are small, some being only two months old. It

is a favorite dish of the native Hawaiian. This dish was accompanied by various vegetables.

We have here the native grass house. Attached to this house was Camp Otis where 3000 of our troops were stationed. The major was making a tour of inspection, and invited me to accompany him. This shows another section of the field, in which the men are drilling. I saw a number of New York troops stationed at this stand who were anxious to have me take their pictures to send home to their friends. Here we have some New York troops sitting under trees eating their mess, which was hardly suited to the country. The government did not provide fruit and vegetables, although the country afforded plenty of both. The hospital was crowded with soldiers who, as a result of the food, in such a climate, had become sick. Most of the troops came on the *Arizona*, and were intended for Manilla, but were left over. The natives arranged a dance for the entertainment of the officers of the *Arizona*. I was invited to be present, going in a party with the correspondent of the *San Francisco Call*. The natives are fond of singing and dancing. They took two calabashes, and by clashing them together, produced a hollow sound which accompanied their dancing. The natives at once appeared with lays of flowers and some of them in native dress.

This is one of the streets which is lined with beautiful residences, and bordered with Century plants. Here we have another of these residences showing palms and also fine groups of beautiful ferns about the house growing luxuriantly. This also shows palms and ferns which one finds in going up this valley, and in suburbs of Honolulu palms are grown extensively.

This picture shows a native picnic. A party of ladies making lays of these native flowers to carry home to their friends are sitting under a Hybiscus tree.

This gives an idea of the rich vegetation of the valley. Here are beautiful tree ferns and Hybiscus, which looks like Mangrove. The flower is yellow with a white centre. The valley terminates twelve hundred feet above Honolulu in a precipice nearly one thousand feet steep. This is a view of the valley,

which is six miles from Honolulu. It was the only possible course to Honolulu in that vicinity until the road was cut. The termination of the drive along this way was cut out of a precipice. This road has been cut at great expense. This place is of great interest because of its history. At this place the King of Hawaii murdered two English captains.

This shows the cultivation of rice by the Japanese and Chinese. You can see such a picture as this at any season of the year in the department of rice culture. The soil is extensively rich, and the Chinese are excellent market-gardeners. This picture shows a field of beans. The Chinese get immense crops from them. We now see a field of lotus, extensively grown in Japan and China. It is valuable for its roots which, as an article of food, is much relished by the Eastern people, being sometimes preferred to olives.

Here we see the beautiful residence of S. M. Damond, who managed the finances of the Queen, which she presented him in recognition of his services. Proceeding along the avenue lined with date palms we come to a grass house which formerly was used by the better class of Hawaiian people. We found in this house a great many antiquities, and some idols that were worshiped by the natives.

We saw quantities of the better class of bananas. They are no such bananas as we get in Worcester or Boston. This class of bananas sell readily at forty cents, but when better varieties are introduced there is no reason why they should not bring a fair price. There are a good many things that might be introduced into these islands successfully, and there is no reason why chocolate cannot be grown here. Tea and coffee are next to sugar as a staple industry. Numerous fields of pineapple are grown for both home and foreign use. The first crop was absorbed in a Honolulu market at seventy-five cents apiece. These are much superior to the pineapples previously grown there, and are now exported in large quantities to San Francisco. Oranges, lemons, and all citrous fruits grow well in Hawaii. Last year they imported five thousand dollars worth of these fruits from San Francisco.

This shows a picture of a date palm in fruit. There are huge bunches of fruit at the top. The tree was fifty feet in height. These trees grow remarkably quick and give excellent results. It is a fruit that is now grown to some extent, but they do not have the best varieties. The Liche, ordinarily found along rivers in China, especially in Canton, grows extensively. You sometimes get the fruits at Chinese stores, but here it is usually inferior on account of age. It tastes like delicious raisins when fresh, but the Chinese rather like it when it is musty.

This picture shows bread fruit, which grows in great abundance, tastes very much like bread. It is extensively used in our tropical countries. The leaves of the plant are used to wrap meat in, and it has the effect of rendering meat tender that is tough.

I met a number of troops who had walked from Camp Otis a great distance, and were expected to walk back. They complained bitterly of the food they received, but it was not the fault of the government, but through the mistake of some official, the supplies failed to reach them. I have since learned, through a letter from one of the young men, that conditions have been improved.

This is an interesting group of natives who are washing clothes in the brook. Growing along the banks of the river is a beautiful purplish flower.

This is the picture of a beach, along which some of the Exqueen's fishermen are enjoying themselves, while here we see the residence of the late Robert Louis Stevenson. Many beautiful plants surround the house, including nearly all of those found in our greenhouses. Vines cover the veranda and arbors. Near the house was a large tree which stood sixty feet, and which was planted twenty years ago.

This is a beautiful yellow oleander tree which is grown extensively in China. We find here two crotons, cultivated in the Hawaiian Islands more extensively than in any other place, except Jamaica. The natives make use of the crotons. The Philanthus is found here. It has purplish leaves. It makes

an excellent hedge plant. On the higher mountains is found Sandal Wood. The Yucaliptus is found in one hundred and fifty different varieties in cultivation in different sections of the island.

This is a scene at the railroad station of Kauai. There is now a railroad running around the coast for a distance of one hundred and fifty miles. It is interesting to see the different nationalities represented at this place. I had a chance to witness a boat-race, and I never saw more enthusiasm displayed at a Harvard-Yale game than was displayed at this race.

Here is a sugar plantation which is the most productive in the world, yielding a dividend of sixty per cent. It yields millions of dollars worth of sugar yearly, and employs twenty-four thousand people, three-fifths of whom are Japanese. The product of sugar is nearly three times that of the West Indies. Passing along we come to a stretch of unproductive land, which might be made highly productive by irrigation.

We have here a picture which shows what is known as the Barking Sands. The sand along this beach is blown upon the rails, and when the train passes along produces a sound like a dog and is therefore called the Barking Sands.

This shows the Tycena Lutea, which is used to wrap up fish. The leaves impart a delicate flavor, and render the meat and fish more tender. No native ever cooks anything of this kind without using this leaf.

On the island of Molokai is the home of lepers. Leprosy is not indigenous to the island, but was introduced a few years ago; also mosquitoes were introduced from South America. This settlement covers a thousand acres.

Here is a view of Cocoanut Island near the harbor. It shows the house where the municipal government was carried on. Kilo has been held back in its progress by Honolulu. The government did not give them money, but for all that it is destined to become the capital, as it is better situated, being two hundred miles nearer San Francisco, and its harbor is easily approached.

This is a view of some magnificent Oleanders, and more inter-

esting palms. This view shows one of the flues in which sugar cane is floated down from the plantations. This gives you an idea of the streets of Kilo. A drive of thirty miles from Kilo brings one to the volcano of Kilauea. Along the road is the most wonderful vegetation, including Dixsonias, Brazilian Tree Ferns and Begonias.

Col. Sacket, from the west of London, has recently bought a coffee plantation here. Coffee at present is sold for sixteen cents a pound, and would pay very well at half that price. At the end of three years a tree will yield three or four pounds of coffee. There is an enormous rainfall, but the rain is at once absorbed because of the dryness of the earth. Coffee is never grown below a height of fifteen hundred feet, and sugar is never grown above this height.

This shows a vine which infests the trees, and finally kills them, and is only limited in growth by the height of the tree.

Above three hundred feet peaches, carrots, parsnips and pears can be grown.

This view shows a volcano mine which overlooks one of the most wonderful craters in the world.

The temperature here never goes above ninety degrees, and below fifty degrees, but on the mountains there is found snow and ice. The temperature is influenced by the Japan current.

This is a section of the surface of a crater. It is three miles long and eighty-two and a half miles wide. There has not been an eruption for eight years. It is only active towards the centre. The lava is very beautiful, being blue, gray, purple and crimson. Vegetation starts up quickly over the lava. This shows a picture of lilies which are very common here. They can be grown at any time in the year, January, April, July, or October.

There is no question but that the possession of these islands would be of great value to this country. The Japanese were very anxious to get possession of Hawaii. Opinions may differ regarding the Phillipine Islands, but we have nothing to regret so far as the annexation of the Hawaiian Islands are concerned.

26th January, A. D. 1899.

ESSAY

BY

H. H. GOODELL, M.A., LL.D.,

President Massachusetts Agricultural College.

Theme:—Trees, Flowers and Fruits of the East.

As the traveller approaches the golden city of the East,—that city perched on its seven hills and spanning two continents,—two species of trees come prominently into view: the one the symbol of life and perpetuity, the other of death and extinction; the one planted when a male child is born, the other marking the last resting-place of some beloved one; the one a giant in size, shading with its outstretched limbs and broad leaves a great area of ground, the other an evergreen, close and compact, tapering up to a point; the one, the *Platanus orientalis*, the plane or sycamore, and the other the *Cupressus horizontalis* and the sempervirens found in every Turkish cemetery. A greater contrast between two trees cannot be found. The one standing alone or in small groups, the other massed in such numbers as to constitute a forest, miles in extent. Of the former, two specimens arouse the attention of the curious sight-seer. One stands in the courtyard of the Seraglio at Constantinople, more than fifty feet in circumference and reputed to have been planted by Mahomet II. in 1452, to commemorate the birth of his son. In one of the great ravines dividing the hills of the Bosphorus on the European side, in the valley of Buyukdéré, about fifteen miles from the city, stands the other, celebrated alike for its age, its size and the historic memories that cluster about its weather-beaten trunk. For two thousand years,

according to the calculations of the botanist de Candolle, has it looked down on the generations of men that have lived and died and passed away. It is about forty-seven yards in circumference at its base, while its branches afford shade to a circular area of one hundred and forty yards. Its huge stem, called the seven brothers, is divided into a number of branches, seven of which issue from below the present surface of the soil, while seven do not divide till they rise a few feet above. The interior of one of these divisions of the main trunk has been hollowed out by fire and fashioned into a coffee-shop in which fourteen or fifteen persons can be easily accommodated. "It is," says an enthusiastic Frenchman, "a temple of verdure whose leafy dome rests amid the clouds." And here nine hundred years ago, in this great temple of nature, while the choirs of birds sang matin masses in response, tradition tells us that Godfrey de Bouillon gathered together his crusading host and offered up a solemn thanksgiving to the God that had brought them thus far upon their way. And we may well believe that as the warlike bishop, Adelhemar of Puy, elevated the host and blessed the kneeling multitude, the cry once more arose and swept from rank to rank, till with one loud shout the whole vast army, six hundred thousand strong, joined in "Dieu le volt! God wills it! God wills it!"

The cypress is only found in Turkish cemeteries, being planted perhaps for two reasons: because its aromatic resin helps overcome the effluvia arising from the shallow graves; and because its evergreen foliage, dark and sombre though it is, is the emblem of immortality. The Greeks and Armenians, instead of the cypress, use the sycamore or, quite as frequently, the graceful *Pistacia terebinthus* or turpentine. These grow to considerable size; one in the garden of the British Embassy measuring twelve feet in circumference, being over a hundred feet high and shading a circle of one hundred and eight yards. These trees, notwithstanding their size, are sometimes parasitic, and but a few years ago, just across the Bosphorus, on the Asiatic side, could be seen an enormous one growing out of a still larger cypress. There is another peculiarity of the tree.

A species of insect, probably an aphis, forms a nest in the extremity of the leaves by puncturing its substance, which then becomes fungous and swells into fleshy follicles of a bright scarlet hue, having a strong resinous odor and clammy feel and full of turpentine. They are so abundant sometimes as to give the tree the appearance of bearing rich flowers or fruit.

Another variety of this tree, the *Pistacia lentiscus*, yields that pure, transparent gum, the Mastic, used by the natives for chewing purposes, to preserve the teeth and sweeten the breath. It is also used by the Greeks to improve their brandy made from grapeskins. It is procured by making incisions in the bark of the tree, the resin exuding in clear, tear-shaped drops. So highly was the product of the island of Scio esteemed that the inhabitants were compelled to pay an annual tribute of one thousand pounds for use in the Sultan's seraglio.

The olive is grown over a very wide area, especially in Asiatic Turkey and the Mediterranean islands. An olive orchard in the flowering time is one of the most beautiful sights in the world,—the gnarled and twisted trunks, hoar with age; the short, oblate, slightly curled silvery leaves; the branches fairly bending beneath the weight of the snowy petals; and the ground beneath and around white as with flakes of snow. Job says, referring to this peculiarity of its shedding its blossoms, "He shall cast off his flowers as the olive." Next to the cereals, it is by far the most important agricultural product of Turkey. Its berry, pickled, forms the chief article of food; the oil, produced from its pericarp, seasons most of the dishes, and keeps alive the light that cheers the winter's gloom; its wood, close-grained and hard, takes on a beautiful polish and is very highly prized; while its bark and leaves, possessing certain febrifuge principles, are much sought after by the leeches of the country. The tree is slow in reaching maturity, but after the fifteenth or sixteenth year it bears on indefinitely, and seems never to lose its vitality. There are trees in the garden of Gethsemane estimated to be over a thousand years old, still in full sap and vigor. It is of all fruit trees the hardiest, for scarcely any amount of mutilation, any severity of frost, or

even sharp scorching by fire suffices to destroy its life. "So long as there is a fragment remaining, though externally the tree looks as dry as a post, yet does it continue to bear its load of oily berries, and for twenty generations the owner gathers fruit from the faithful old patriarch. This tree also requires but little labor or care of any kind, and, if long neglected, will revive again when the ground is dug or ploughed, and yield as before. Vineyards forsaken die out almost immediately, and mulberry orchards neglected run rapidly to ruin; but not so the olive. Though they may not have been attended to for half a century, yet they continue to be a source of income to their owners."

These peculiarities Virgil observed and carefully noted in his Georgics nearly two thousand years ago:—

> "But on the other hand, no culture needs
> The olive tree at all; not it the knife
> Forthcurved expects, nor clinging hoe, when once
> It in the field is fixed, and bears the breeze.
> To it the earth, its bosom loosened up
> By furrows of the ploughshare's hook-like tooth,
> Sufficient moisture gives, and gives the plough
> Returns of weighty fruitage rich and ripe."
> —Georgic, II., p. 420.

> "Why, cleave an olive tree's dry stump, and, strange
> And wondrous strange to tell, an olive root
> Will from the dry wood come!"

Frequently a whole village will unite and plant a grove in common. Then not even the berries that fall to the ground are allowed to be picked, till a proclamation is issued by the head man of the village or the governor of the province. A tree yields from ten to fifteen gallons of oil, and the profits are about one hundred dollars to the acre. It is claimed that the tree bears only every other year; but this is due probably to the vicious manner of gathering the fruit,—beating the branches with long poles to shake off the berries, and, in so doing, bruising and destroying the tender buds that are setting for the next year's crop.

The husks with which the prodigal son would fain have filled

his belly, and which Scripture says the swine did eat, were not after all such very poor fare. Many a repentant sinner might go farther and fare worse. They are the fleshy pods of the locust tree *(Ceratonia siliquas)*, a leathery brown when fit to eat, some six to eight inches in length, containing a spongy, mealy pulp, of a sweet and pleasant taste in its ripened state, and in which are imbedded a number of shining, brown seeds, very hard, and somewhat resembling a split pea. These seeds are of no value whatsoever, on account of their bitter flavor; but the sweet pulp of the pod, when dry, is extensively used as an article of food, particularly among the laboring classes. In Syria it is ground up into a coarse flour, and a species of molasses made, which is used in the preparation of different kinds of sweetmeats. As food for horses it is exported in large quantities into the south of Europe. Into this country and Great Britain it finds its way, under the name of locust beans or St. John's Bread, receiving both names from the ancient tradition that they are the "locusts" which formed the food of John the Baptist in the wilderness. The tree is cultivated extensively in all the countries bordering the shores of the Mediterranean, both for its food-producing qualities, and its wood, which is hard, and susceptible of a fine polish. In size and manner of growth it resembles an apple-tree, but is more bushy and thick-set. It yields a prolific harvest, and it is not unusual to see a tree bearing over half a ton of green pods.

One other tree deserves mention, not on account of its food-producing qualities, but for its importance in a commercial point of view. It is the shrub oak,—the *Quercus ægilops*,—which, growing wild on the mountain slopes and rugged steeps, where nothing else will grow, gives employment to hundreds of men, women and children, who, in the season, go out to gather the acorns. These are brought down in sacks to the nearest seaport, whence they are exported, thousands of tons annually, under the name of "valonia," to be used in the tanneries of Europe. They readily command eighty to ninety dollars a ton; and, from the seaport towns of Smyrna and the islands adjacent,

forty thousand tons have been sent to England alone in a single year.

The wild olive, *Elœagnus augustifolia*, grows abundantly in low situations and humid soils. It has more the habit and appearance of a willow than an olive, though the underside of the leaf is hoary and sometimes quite silvery. The fruit is dry, mealy and saccharine and retains for a long time its usual size and form. It is sold extensively in the markets.

The *Acacia julibrassin*, though not a native, is found in every garden in and around Constantinople. The foliage, though not sensitive to the touch, is highly susceptible to the variations of the atmosphere. On a bright day the dense pinnate foliage gives a thick shade, but if rain threatens, the leaflets close their under surfaces together and the tree seems denuded of leaves. The beautiful, large clusters of stamens of bright pink color and rich silky texture make it an essential favorite among the Turks who have given to it the poetic name of Gul Ibrisim or Silk Rose, and from this has arisen the specific botanical name of Julibrassin.

The *Smilax excelsa* runs riot in all the woods covering the hills on either side the Bosphorus. It climbs to the tops of the highest trees, and descending in streaming branches forms a lofty green wall by the roadside. In autumn, loaded with rich, red berries, it is wonderfully beautiful.

The cherry, a pale, amber-colored, transparent variety, grows wild in the woods of Asia Minor. The flavor is delicious. The peculiar fact about the trees is their great height, the lowest branch being thirty to forty feet from the ground and the whole tree measuring seventy to ninety feet.

Other fruits abounding are apricots, figs, walnuts, plums, medlars, chestnuts and filberts. The pears and apples are not worth mentioning. The fig-trees grow to very large size. The trunk of one standing in my father's garden was about the circumference of my body, and in its branches I used to sport in my boyhood's days. The apricot-trees were likewise large, the size of our largest apple-trees, the fruit more nearly the size of the peach and more juicy than those grown in this country.

Among the shrubs, one of the most beautiful is the Red Bud or Judas tree (the *Cercis siliquastrum*) which grows in profusion on every hillside. As you descend the Bosphorus in the early spring, the mountain slopes on either side from the water's edge to the very summit are ablaze with its bright pale red blossoms, while interspersed are the beautiful flowers of the almond. The buds are gathered and used with other raw vegetables by the natives in salads, to which they lend a charming color and flavor.

The *Rhamnus paliurus* or buckthorn is the common hedge in Asia Minor and forms a most impenetrable hedge. It is covered with spines which stand in pairs, one being straight and pointed and very sharp, the other hooked, so that once any portion of a person's dress is caught, the whole soon becomes engaged and it is very difficult to tear oneself loose. Like the "wait a bit thorns" of Africa, once caught, there is no hurry in getting away. It is popularly believed to be the plant from which our Saviour's crown of thorns was made. It differs very materially from the *Spina christi* in the membranous wing surrounding the seed-vessels. In fact these seed-vessels are its most marked characteristic, for when fully ripe, they hang in profuse clusters of a vivid light-green or yellow, giving the tree the appearance of being clothed with rich flowers.

The strawberry tree or arbutus belongs to the heath family or ericaceæ, to which belongs our common trailing arbutus. The species, I am inclined to think, is the *unedo*, but I am not certain. At any rate it is the one mentioned by Virgil in his Third Eclogue,—"Moisture is grateful to the sown corn; the arbute to weaned kids; the limber willow to the teeming cattle." It is a shrub eight to ten feet tall, with fruit fleshy, five celled, many seeded, dotted with little projections having the resemblance of a strawberry. The leaves are smooth and shining, oblong-lanceolate, more or less serrated. The flowers are white, growing in clusters, but each separate flower bearing a resemblance to a lily of the valley. The fruit of all the species seems to possess a narcotic influence, and wine is made in Cor-

sica from the arbutus unedo. The name strawberry tree in the United States has been applied to the *Euonynus americanus*, a very different plant of an entirely different order. I think it does not grow wild, at least I only recall seeing it cultivated in gardens.

The vitex agnus-castus, in company with the oleander, is found on the banks of all the rivers in Asia Minor. The pink and lilac blossoms form a beautiful combination in color, while their fragrance fills the air. The agnus-castus derived its name from being carried by the priestesses in the festivals held in honor of Ceres. To this day, certain virtues are ascribed to it.

Of the numerous flowers growing wild on the hillsides of the Bosphorus those coming most prominently to my remembrance are beautiful anemones, red, white, pink and yellow; three kinds of thistles, pink, purple and yellow; single hollyhocks of great diversity of color; forget-me-nots and English daisies; poppies flaunting their blood-red banners amid the pale lavender of the flax fields; white snowdrops and bloodroots pushing up their delicate flowers; the sign and symbol of the coming spring; while Scotch heather, wild thyme and lavender made the air redolent with their spicy fragrance. A species of erigeron or flea-bane, which is used (from its strong odor) to keep off noxious insects, light up with a ruddy glow the parched and withered vegetation of the islands of the Marmora in the fall. The *Pancratum maritimum* abounds in all the sandy plains of Asia Minor. It propagates by seed as well as bulb. It is claimed to be the lily of which our Saviour said, "And Solomon in all his glory was not arrayed like one of these." A gigantic arum grows on the plains of Broosa, the flower reaching the height of four feet, its spathe edged with purple and the stem variegated like tortoise shell. In a little valley lying at the foot of Mt. Olympus is one of the most fragrant spots in the world. It is planted entirely with roses of the centifolia, damascena and moschata varieties. For here is manufactured that most costly of essences, the attar of rose. As it takes the petals of 100,000 roses to yield 180 grains of attar, you can readily understand how many thousands were

planted in this garden. In mere sensuous pleasure, nothing can surpass this spot. You wander aimlessly about, lulled by the sweet notes of the nightingale, intoxicated by the fragrance rising from a myriad of flowers, the eye charmed by the wealth of color banked about you, and only wishing that each sense might be multiplied in power fourfold, that you might in a fourfold manner drink in the pleasure of the hour. The valley is appropriately called Gul Batistan, or the valley of gratification.

You pass from this valley of peace and repose, where everything conspires to lull the senses into a dreamy forgetfulness, into a place of wonderful commercial activity, into the great silk-manufacturing industry of the East. Broosa is one of the most beautiful and interesting cities of the Orient. It lies at the foot of the Mysian Mt. Olympus. The country around is volcanic in its origin and earthquakes are not unfrequent. Within my own remembrance it has been almost totally destroyed. In the centre of the city rises a rocky eminence crowned with the remains of an ancient citadel. To supply it with water, a long sloping passageway, descended by 150 to 200 steps, leads to the well or spring found at the bottom. It is pre-eminently a city of baths. Fuel is not needed, for hot springs abound, and by their side are fountains of ice-cold water fed by the melting snows of Mt. Olympus. Fronting the city are miles of plain covered with mulberry trees, mostly of the alba variety, for the leaves of the niger are not considered delicate enough to suit the delicate palate of the silkworm. It is a beautiful sight to see the tender care lavished upon these worms. They are tended by women who, twice or thrice a day, feed them with fresh leaves, brush out the droppings and remove the diseased or dead caterpillars. These women take the most scrupulous care of their persons and clothing in order to have nothing offensive about them. It is said that in sudden cold they will even cherish them in their own bosoms to prevent their being chilled. And this is not strange when you remember that the loss of their silkworms means the loss of their livelihood. The story of the introduction of this industry fifteen

hundred years ago is an interesting one. Silk was at that time brought from China and was worth its weight in gold, pound for pound. Some Christian monks who had been for many years resident in China came to the court of the Emperor Justinian claiming that the eggs of the silkworm might be imported safely. Commissioned by the emperor to undertake the enterprise, they departed on their long journey and returned after several years with the eggs concealed in a hollow cane. Meantime mulberry trees had been planted and soon the industry was started, which has lasted until the present day.

The implements of husbandry are very simple and primitive. The ox-yoke is made of two straight pieces, one above, the other below the neck, the top piece alone being hollowed. Two straight pins serve instead of the yoke to inclose the neck, a strong trunnel in the middle taking the place of staple and ring.

The plow is absurdly ridiculous. Take a pole about ten feet long, four or five inches diameter at the butt, and by mortise and tenon unite this at a slightly acute angle to another piece of about equal size, sharpened and shod with iron to plough the earth, and variously provided with some sort of handle for the plowman's hand, and you have an Oriental plow. It does not turn a furrow, it simply scratches the earth to the depth of four or five inches, and then the ground must be cross-ploughed in order to secure anything like an adequate preparation for the sowing. European plows, to which several pairs of buffaloes were attached, have been introduced at various times, but were soon given up on account of the difficulty of finding animals strong enough to draw them. The hope of success lies in the improvement of the breed, but there is something beyond this, for the best breeds introduced soon degenerate from lack of nourishment. The country must be better governed, property made more secure, before farmers will find it to their advantage to give their cattle more than the scanty grass they can pick up here and there on the parched hillsides. The improvement of implements will follow as a matter of course. The same thing is true of the ordinary horses; barley and straw alone, and the treatment received through many generations, has produced the

small, wiry, enduring hack of Asia Minor, as far removed from the lithe form and airy grace of the Arab steed as light is from darkness.

The spade is triangular in shape, with a straight handle, longer than a man is tall. A few inches above the blade, a piece of wood is mortised in, upon which the foot is set, to force the blade deep into the earth. The length of the handle enables the laborer to lay his whole weight upon the extremity, and afterwards use it as a lever in order to raise a large quantity of soil, which he merely turns over. "Shallow ploughing, but deep spading seem then to be two chief rules of Oriental agriculture."

The hoe has a broad blade, not flat, but slightly concave, the handle very short, compelling the laborer to crouch to his work. The sickle is about the same form as our own. The scythe, shorter, heavier, clumsier, the snath nearly straight, with but one handle, the left hand grasping the snath itself. The blade has no curve worth mentioning. Fortunately for the back of the laborer, hay is in so little demand that the scythe is practically only used in the cradle, and that, not by Turks, but almost exclusively by the Bulgarians. As you pass by the great wheat fields, you will see men and women with their sickles slowly and laboriously reaping the golden harvest. Ask them whether they could not do the work much more rapidly and easily with the cradle, and they will answer, "Doubtless." Ask them why they do not use it, and with a shrug of their shoulders they will reply, "Good Lord! it is not our custom." And *that* is the end of all controversy with an Oriental. To change the custom of his fathers is as impious an act as to defile the bones of his ancestors or curse his grandmother.

One is sometimes in despair of any progress in the Eastern world. The beginning must be made at the root. Educate the youth and they are as ready for improvement as any people. In some places on the rich banks of the Danube, modern implements of harvesting have been introduced, and the produce doubled, because the farmer is no longer afraid of sowing more than he can gather. The women do a great deal of work in the

fields, and may be seen laboring side by side with the men. The position occupied by them may be fairly well illustrated by the following story: A gentleman riding one day in the country overtook a man who had laden his wife with a heavy bundle of sticks. He remonstrated with him, saying, "My good man, it is too bad that you should load your wife down in this way. What she is carrying is a mule's burden." "Yes, your excellency," the man replied, "What you say is true. It *is* a mule's burden. But then you see Providence has not supplied us with mules, and he has supplied us with women." It is the same all through the East. Sir Thomas Munro, in his "Travels to the City of the Caliphs," relates as a reason why an Indian should be exempt from paying his tax that he pleaded the loss of his wife, who, "Did as much work as two bullocks."

Stuart Wood, in a recent number of the "Quarterly Journal of Economics," says: "The agricultural processes of different countries are among the surest indications of the condition of the laboring population. In Germany it is a common sight to see a cart drawn by a woman and a dog. Where labor is dearer and money more plenty, or the people a little easier, a horse releases both alike from their unnatural task. In the United States, where labor is dear, costly agricultural machinery is extensively used in spite of the smallness of the farms. It is much used in England also, because there the farms are large; and wages, although lower than in the United States, still far exceed those of other countries. In Russia, on the other hand, in Turkey and in Asiatic countries, we find the rudest tools; baskets are used instead of wheelbarrows, wooden plows instead of iron ones; and gangs of spade men replace both the plows and the beasts which draw them. A part of this is no doubt due to sheer stupidity, but much is also due to the price of labor and the rates of interest."

The products of the soil are as various as the climate and geological character of the country. Fruits are abundant, of excellent quality, and extensively used by the whole population. Grapes are delicious, and within reach of the poorest, selling at the rate of two and three-fourth pounds for two or three cents.

Apples, apricots, peaches, cherries and plums have their localities of abundant growth, but no attention is paid to obtaining the best kinds or improving those already possessed.

Of grapes, whoever has once partaken of the famous "chaoush" from the Byzantian side of the Bosphorus, will forever eschew all others: thin-skinned, small-seeded, fine-pulped,—a dream, a delight,—something to be talked about, *never* to find equalled. The vineyards of the Christians and the Moslems differ in one very important particular. The former cultivate those kinds suitable for making wines; the latter, those that are best for food. While the one are making spirits, the other are preparing that grape molasses called "pekmez," which is extensively used. In it, all manner of fruits are stewed or boiled, and the preserves laid aside for winter use. With it savory dishes of quinces and meat, or chestnuts and meat, are prepared, much relished by the poor.

The cereals of the empire do not differ much from ours. The exports are barley, maize and wheat. Rye, oats and millet give good results, and there are various other seeds of good native use. Looking only at the soil, climate, industrial population and the rivers and coasts of her great inland seas, Turkey ought to be our formidable rival in the markets of Europe, but her state of paralysis is such that nothing is to be apprehended from that quarter. Destructive treaties with England, and stupid legislation on the part of her own government, have reduced her to a state of hopeless bankruptcy.

Turkish agriculture and horticulture furnish all that the heart could wish in the shape of edible vegetables. All that we produce is there produced, with the exception of potatoes, which are imported from Europe;—squashes of various kinds and measure unlimited; okra, spinach, celery; melons unrivaled in flavor and size; cucumbers of any length you choose.

Among the vegetables, several deserve special mention. The tuberous knobs of the roots of the Cyperus esculentus are eaten either raw or made into some kind of a preserve. It is called by the natives heavenly manna or "manna turano," is quite sweet but somewhat woody in texture and looks like a minute potato.

Two varieties of egg-plant are grown, one similar to our own, and the other bearing a round, rich, dark purple fruit, called the apple of Sodom, because it is sometimes punctured by a minute insect, a species of cynips, which gangrenes the fruit and converts the inside into dry ashes while the outside preserves its plump and beautiful aspect.

The *Cicer arietinum* or chick pea, contrary to the other plants of the pea family, is distinguished by its serrated leaflets. The pea is of a bright yellow, half again the size of a large marrow-fat. It is cooked with rice or other dishes, or is simply parched and sold in the streets to be eaten as we do peanuts. When freshly parched it has a peculiarly crisp, pleasant flavor. It is claimed to be the parched pulse mentioned in Scripture.

A dozen or more different species of gourd are grown for cooking purposes, but I will only speak of the *Cucurbita claviformis*, which reaches a length of seven or eight feet. It grows so rapidly when well watered that in an incredibly short space of time it forms a dense, shady arbor, under which the people sit and smoke. When young, not more than six inches in length, it is boiled and then stuffed with force-meat and rice. This dish and meat-balls wrapped in tender grape leaves and covered with a white sauce are exceedingly palatable. Owing to its rapid growth it has been thought to be the gourd of Jonah.

In opening this lecture, I brought before you a picture of the most striking objects of nature as you approached the great city of the East, and now as I close let me leave with you the impression that lingers still with me after the lapse of forty-three years as I sailed away into the unknown West. Behind me lay the city of Constantinople, each minaret and dome blazing with light as though shot with purest gold. To the east rose the majestic, snow-capped peak of Mt. Olympus, its pure white crimsoned with the ruddy glow of the sun's last rays. From the mainland drifted over the spicy perfume of the heather and the thyme. The porpoises were gently sporting in the blue waters of the Marmora. As we steamed past the little islands

of Halki and Prinkipo, around huge bonfires the young men and maidens with hymn and dance were celebrating the summer solstice, leaping through the flames. A moment more and twilight deepened into night, and the scenes of my boyhood's days had faded away into a memory of the past.

2d February, A. D. 1899.

ESSAY

BY

EDITH BARNES, Northboro, Mass.

Theme:—Mosses and Lichens.

Ladies and Gentlemen of the Worcester Horticultural Society: When your Secretary wrote to me inquiring about subjects on which I could address you, I gave him, among others, this talk on Mosses and Lichens, saying it was of no practical value whatever, and would not interest a club whose attention was directed solely to those ends. Considered broadly, however, it has, in common with all studies whose immediate effect is to open the eyes, quicken the observation, give interest to nature, a very practical bearing, especially to people living in the country.

I think we will all admit that any condition which obliges a man to rearrange his plan of life, perhaps sell his home or move to other regions, possibly change his occupation entirely, is a practical consideration, as much so as finding out the best varieties of plum or how to destroy the latest insect pest. Yet, how often do we hear that one has left the farm or country home because the wife or children are not contented. Anything that makes a person happy or content in his enviroment is of the highest practical value. Now all the studies of nature,—landscape art, the birds, the flowers, these humbler plants,—if begun and persevered in, so that they become a part of one's spiritual nature, not a mere outside affectation, make one of the strongest bonds between the individual and the soil, man and a rural environment.

In days past, it has often seemed to me a fitting end to an out-of-door tramp to drop in upon one of our neighbors on my way home. There was something about her that was akin to sympathizing with the out-of-doors that made it a pleasing variation, yet an harmonious element, of my walk.

She was of old New England stock and traditions; a large woman, over eighty, nearly helpless with rheumatism, and nearly blind, so that her favorite seat was her arm-chair by her south window. Her face was as placid, fair and smooth as a girl's, and her brown hair as fresh above it. She had seen about as hard a life as any of us would care to face. Brought up on a farm, she had lived to see mother, brothers, sisters, all pass away; the farm lost and her father alone left to her, with nothing on which to live, except what they earned from day to day. Her father lived to be over eighty, supported, in part, by the town at the last. Then she came upon the town entirely for support, although allowed to care for herself in two rooms of the old house where they had lived for a number of years. Think of it! The last of all near relatives and friends, eighty years of unremitting toil, which had yet not sufficed to keep them from that which is so great a dread of all old-fashioned New Englanders, "coming upon the town." And yet this woman could say, "I have had a happy life!"

Now, I am not so much a special pleader that I am going to claim that this was all owing to love of nature: but I do think it was largely owing to their enjoyment of their environment (I say they, for both father and daughter were of much the same nature and disposition); an enjoyment which they got partly from people and partly from nature. Nature in the wild, and nature cultivated—their garden, the round of farm life in the neighborhood. Some of their knowledge was tradition; much, however, first hand, for they were good observers, especially the father. They found nature immensely interesting. There was a zest in their life and interest in things that I have not found in more favorably-placed people. There was superstition in some of their beliefs; to my more modern scientific way of looking at things, some unwarranted

deductions; but all were based on or related to acute, affectionate interrogation of natural phenomena.

As I entered the room, on my walk, she was all loaded and ready with questions. Hardly had I closed the door—I always let myself in—before I was seated, she was leaning forward with expectant attitude:—"Has your father planted his peas yet? He planted them the 17th of March last year. They ought to be planted in the full of the moon," she would add rather deprecatingly; for I think she knew that was a part of her creed I did not take much stock in—or, "Have you heard the piping frogs yet? You have? I used to hear them in the pond-hole here; but my hearing isn't as good as it used to be." Or, suiting the season, it might be, "Have the white oak trees dropped their leaves yet? Father used to say that when the white oak trees dropped their leaves, in the wood, the back of winter was broken." Or, "Have you found any bloodroot yet? or goldthread? or heard an oriole"? Something showing that she was following the round of nature with interest.

Any considerations which, under such untoward circumstances, make life not only bearable but enjoyable, seem worth taking account of.

To me, or any one who has studied the lichens and mosses, they need no apology or practical considerations to bolster up their claim to consideration. Like Emerson's Rhodora, they are their own excuse for being. To one whose eyes have not been anointed, they seem small and unimportant. I take them up together in this talk, as they are often confounded, and because their place in nature, the touches in color and picturesqueness which they give the landscape, are much the same in both.

The leaves on mosses are one cell deep, and in them first appears a vein—the first time in the evolution of leaves. The shape and arrangement of the cells is called the leaf areolation, and is very various but constant, becoming an important point in classification. By spreading out a leaf under a lens of sufficient power, as there is but a single layer of cells, we get a full view of its structure, margin, apex, &c., and these are

very pretty. The veining above alluded to is confined to a midrib, sometimes only a beginning at the base of the leaf, sometimes extending half way, or just short of the apex or beyond. It has been shown to be mainly a conductor of water, and is found chiefly in leaves of plants whose habitat is such that it has a constant supply of moisture. In these conditions, it has been found that a well-developed costa will supply the loss of transpiration. The property which mosses have of drying up and again reviving is a very remarkable one. It resides in an undetected property of the protoplasm. How remarkable that property is is proved by some artificial experiments. Severe desiccation in a drier was applied to *Barbula-muralis* with the aid of sulphuric acid, and after eighteen months, after a few wettings, it renewed growth in all its parts. A species of *Grimmia* was dried until it would pulverize, left in a drier ninety-five weeks, and again revived. This is in excess of any natural drying it could be subjected to. Mosses have developed many devices to economize moisture and to distribute it rapidly over the whole plant, so that a short, small supply of rain will do the most good, by being spread and retained.

Some, like *Dirianum-undulatum* and the *Mniums* have a felting of hairs about the lower part of the stem, ascending more or less. The leaves are arranged overlapping or clasping about the stem so as to form a system of capillary chambers through which the water passes rapidly. In *Sphagnum* there are two sorts of cells,—one of large green cells, in which the assimilation is done, and long capillary cells which are colorless and furnished with points or pores for the rapid circulation and storing of water.

It is owing to the capacity of holding moisture and rapidly gathering it that makes mosses so valuable in the forest floor or on open plains, especially on mountain slopes, as they prevent the rapid flowing of the water, which carries away the soil. I was reading recently an account of large areas in Alaska covered deeply with mosses, which prevented the gullying and denuding of these districts.

An interesting point is that in some of the higher mosses, or

Polytrichum, a fibro-vascular bundle first makes its appearance in the middle of the stem. The faint beginning which foreshadows the giant trunk of the forest tree. Also in some capsules, as in *Orthotrichum*, quite well developed *stomata*, or breathing pores, first make their appearance.

Let me try now to give you the place in the ladder of plant life which mosses and lichens hold, and somewhat of their life history.

[This was done by the aid of colored sheets.]

This, in bare outline, is the life of a moss or lichen; but we all know that the life history of any plant means much more in the economy of nature and our æsthetic enjoyment than any such description will indicate.

As we go about out of doors, we find these plants almost everywhere. A moist climate is especially favorable to their growth, so wonderful stories are told of the beauty of mosses in our Northwest Coast.

Moisture and rather cool temperature, together, make the conditions for best growth. Still, they have a wonderful faculty for drying up and then, with returning moisture, to renew themselves quickly, flourish and improve the season of moisture, be it longer or shorter. We find some species in dry, exposed situations, as the bark of trees even in open orchards, though more often in forests on rocks, on old boards, walls, and fence-rails, roofs of houses. Some old shed roofs are verdant gardens of many species of plants. On the ground, in open, worn-out fields, we find the ground entirely occupied by *Polytrichum-commune*. What seem bare banks and trodden foot-paths are, on examination, found covered with mossy growth. Gravel pits are often nearly covered with rosy *bœomyces*.

As we examine more moist situations, we find correspondingly ranker and more luxuriant growths. Meadows where the feet sink deep into beds of *Sphagnum*; swamps where dead tree trunks are a wilderness of delight, with scores of species of delicate beauty in deep mats, velvety cushions and tiny incrustations. Perhaps the most delightful of all mossy haunts is the mountain stream. Follow the sound of the waterfall

and it will surely lead you through scenes of surpassing loveliness and interest. The cold waters of the spray keep a cool, moist atmosphere always around the rocks. Everywhere are mosses, lichen and liverwort. In the stream, *Grimmia*, *conocephalus*, *philonotes*. Half in and out the water the hand seeks satisfaction into deep beds of *Hypnun-alleghaniense*, the rank form of *Atrichum-angustatum*. In crevices of rocks the shining emerald *Plagiothe ciums*, and, if one is fortunate, the rare, luminous moss; overhead *Neckera* and *Drummondia*, and on decaying trunks that span the stream, mats of shining *Imponens*, *Cupressifolium*, *and Cupressiform;* and, trailing in the water itself, long streamers of *Fontinalis* and *Dichelyma*.

It sometimes happens that a peculiar season brings rare species to light; as, a few years ago, during a very dry time, I discovered what were to me new species in the dried-up beds of ponds and wells, and, hanging from the dried-up stems of grassses and water plants about the margins. Some fine specimens of *H. riparium*, *Dichelyma Capillaceum*, *Conomitrium* were among them.

We often speak with contempt of the fields all grown to moss, as if the moss were to blame. Poor indeed is the soil indicated by the growth of moss! But we should remember that when man has taken the fertility, and the more lordly plants refuse to occupy it, the mosses begin the humble work of renewal. Even subsoil thrown up from some depth, as in ditching, digging wells and cellars, will, if left to itself, be soon covered, more or less, with a growth. I have wondered how the spore got there, whether they were in the soil or were always in the air and ready to attach themselves and start under these conditions.

It is usually the same species that I find in these places—*Physcomitrium-pyriforme*, *Bryum-argentia* and *Funaria*. These species seem to get along with the smallest quantity or no humus. A few years ago, there was a wood burnt over near us. It was an old wood, fifty years' growth at least. It had been cut off, and a fire started in midsummer, burning everything, including the cord-wood. It was dry and hot and the

fire very fierce, so everything was burned, even the soil. The ground was left in such a barren condition that plants have been very slow in taking possession again. But the first fall I noticed broad tracts form, six and ten feet wide, of thin moss growth, especially *Funaria*, its tangle of silky stems the most luxuriant I had ever seen. Another thing I noticed here was the growth of *Marchantia-polymorpha* in the burnt field. It was not the first time I had found it in association with ashes and charcoal,—once in the cellar of a burned house, and several times forming lonely circles around a deserted camp-fire in the woods.

It always interests me to find a plant or animal occupying a peculiar and circumscribed habitat. It seems as if it had such a special work to do in nature's economy. So I was interested in Mrs. Button's account of the *Splachnum*. She writes :—" In mountain districts, where cattle pass to and fro from the meadows and Alps, one notices on their halting-grounds and along their tracks moss of a conspicuous green growing on circumscribed spots. On closer examination we find we have here an example of that remarkable group the *Splachnum*, and that it has selected the cow dung to be the nutrient element substratum. Each group of emerald green *Splachnum* is strictly limited to the area of a lump of dung, no trace of it is seen elsewhere, all the stages of development of this moss following each other in the same substratum. First of all, the lumps of dirt, which are kept moist by rain or standing water, are enveloped in a web of *Protonema*, and their surface acquire thereby a characteristic greenish lustre. Later, hundreds of little green stems, thickly clothed with leaves, emerge, and the spore cases, which resemble tiny antique jars, and are amongst the prettiest exhibited in the world of mosses, become visible as well." Other species of *Splachnum* vary their habitat so far as to occupy the excrement of the chamois, the reindeer, birds of prey. One specimen was found in the foot of an old stocking, another in the skull of a musk ox. Still another in the skeleton of a hedgehog.

Each season has its own peculiar charm and its own special

plants to offer for the students or admirers of nature; and the mosses and lichens seem to fill a gap which would otherwise be vacant. After the last blossom has gone, when mushrooms, even, are no longer found, save, perhaps, a few blackened brick-tops or *Omphalia-campanula* around the frosty stumps, when the fall rains have been with us, and the nights are cool, then the mosses and lichens are at their best; they soak up the abundant moisture, put on their greenest colors, and send up their tiny fruiting capsules. Now is the time to collect for winter study. On starting out for a tramp, supply yourself with a number of small paper-bags. On finding a specimen you wish to preserve, put it in its bag, with something to indicate the substratum on which it was found, pin to and put in pocket or bag. On reaching home, add dates and place and pack away without further care. In the winter, when you wish to study your mosses, wet them out thoroughly and they will be as fresh as if newly gathered. They keep indefinitely dry, and stand considerable hard usage.

In these late fall days, and again in the time of the spring rains, and, indeed, all through the winter, during milder intervals, whenever we hear the drip, drip on the roofs, we know the mosses are waking up and we can look out to such renewal and enjoy the rich colors they take on. The lichens, especially, are dull, lifeless-looking things when dry; but, with a good soaking, become changed, as with magic, into richest colors. No gaudy primaries, but rich secondaries and tertiaries—olive-green, sage-green, apple-green, grays, mauve, ruby, bronze, orange, with dots of bright colors.

A friend was being shown over the new house of a wealthy ex-governor. She particularly admired the coloring of the walls, draperies and carpets. She was told that the designer was a real artist and did really what so many claim to do, but in reality do so seldom, copied his colors directly from nature. I have been told that Worth and Doucet do the same, and have read descriptions of their costumes named from natural scenes or objects, as for instance, one was a lichen costume. Surely, one could not copy any colors with greater security in produ-

cing harmony than the ones we see on the trunks of the elms, ashes, on the stone-walls and fences after a rain.

There is on Mt. Pisgah a rock covered with a rich growth of *Umbilicaria*, which is worth a visit after every rain. The boulder is covered with the delicate apple-green folds or ruffles, which fall in frills, showing the rich underside, which is black and velvety. It is the lichen, I think, which Mr. Bolle refers to in his description of a lichen which covers the peak of Mt. Chocorua. He calls it the burnt paper species. He describes himself as going out into a swamp during a heavy thunder-storm to see the effect of the rain on various things. Among other phenomena he sees this :—

"Presently a vista opened northward, and at its end rose the dark peak of Chocorua. After a rain, this towering rock presents a noticeably different appearance from its normal coloring. Most of its surface is covered by lichens, one species of which, when dry, resembles burnt paper. When rain falls upon them, these lichens alter their tints, and the burnt paper species in particular becomes so green that a wonderful change takes place in the whole coloring of the mountain."

How many lichens are associated with our country walks, perhaps, unconsciously! The *Cladonia*, or reindeer moss, that crackles with crisp brittleness as we climb the hill pastures in summer; another *Cladonia* with tiny goblets, my father used to tell us children, were "fairy wine-glasses," and the little vermilion-tipped species near by, the "fairies red-apple trees"; the *Cetraria*, found so abundantly in old pine trees; *Peltigera*, conspicuous among the green mosses in spring; *Usnea*, that cosmopolite that drapes the trees of the swamps like Southern moss, and sacred to all bird lovers as the chosen material of the nest of that dainty darling the Parula warbler; *Sticta*, whose curiously-shaped and mottled chalice doubtless suggested the likeness to and hence the healing of the lungs; *Parmelia*, whose circles of crimped, close-clinging tissues, slowly enlarging from year to year, form, with the rocks and fence-rails on which they grow, one of the most familiar backgrounds which the New England nurtured eye takes in. And

so we might go on, but "I don't quite like the cat'log style, dew you? As if to sell off nature by venders."

In closing, no talk on mosses and lichens would be complete which omitted those beautiful lines of John Ruskin :—

"Lichens and mosses—meek creatures"! &c., &c.

9th February, A. D. 1899.

ESSAY

BY

E. L. BEARD, Boston.

Theme:—Hardy Herbaceous Plants.

The lack of interest in this branch of floriculture and gardening in America is to be deplored. A keen faculty of observation on the part of the horticulturist is not requisite to detect the fact that in every quarter, what are popularly known as bedding plants have so far usurped the place of their less obtrusive relatives, hardy herbaceous plants, that the latter are to a large extent unappreciated, because forgotten and unknown.

These remarks apply not only to hardy plants but to some beautiful things not altogether hardy, but such as the gardener whose love for his profession rises above the mere drudgery often incident to its pursuits, may, with the aid of cold frames and coverings, protect through our trying winters with comparative ease, being more than recompensed in spring and summer by the unique beauty of blossom with which some of the more tender are favored. I have set the two classes of plants, the hardy and the more tender bedding plants against each other for our consideration and comparison. The latter includes Geraniums, Coleus, Alternantheras, Pyrethrums, Lobelias and others, and depends for effect on color and strong, often glaring, contrasts.

Such displays show favorably in certain locations, but in this country, where gardening as an art is still something of a weakling, these pleasing horticultural pictures must necessarily be confined to the gardens of a few wealthy persons.

Bedding out, as generally practiced by the amateur and

gardener is like the first attempts of a tyro in painting, crude and inharmonious. There will be found a yearly recurrence of the monotonous ever-blooming reds and yellows with a few inconspicuous and dingy intermediate colors which in summer drought or in heavy rains assumes a forlorn aspect upon which the curtain is dropped by a sharp frost early in the season.

A more general insight into the beauty and adaptability of hardy plants and bulbs, and a more practical study of their habits and requirements on the part of the gardening craft at large, would ultimately lead to such an exposition of beauty in our garden borders that the wearisome round of bedding out and the monotonous recurrence of its short lived display would become not obsolete perhaps, nor would I have it wholly so, but at least subordinate to the more refined and satisfactory culture of hardy plants and bulbs. For general cultivation would recommend Crocuses, Tulips, Hyacinths, Grape Hyacinths, Narcissus in variety ; Iris, English, Spanish, German and Kæmpferi varieties ; Pæonies, Chinese and Japanese varieties ; Foxgloves, Canterbury Bells, Hollyhocks, Delphiniums, Phlox, Lilies, Rudbeckias, Helianthus, Spireas, Clematis, and many other varieties of flowering plants ; also grasses like the Eulalias, that are very ornamental.

16th February, A. D. 1899.

ESSAY

BY

MRS. A. E. WHITAKER,

EDITOR OF WOMAN'S INTEREST, NEW ENGLAND FARMER AND GRANGE HOMES.

Theme:—Antiquated Premium Lists.

THE annual visit to the cattle show on Old Sturbridge Common is one of the earliest memories of my childhood. Although mine was a village home, its productive garden and the housewifely skill of my mother and grandmother were nearly always represented in the hall. This early gave me a vital interest in the exhibition.

The anticipation and realization of the annual fair have lost nothing by the flight of years, but there has come to me the experience to form a more intelligent criticism and a better sense of values. The development of the primitive village cattle show of my childhood's remembrance into the grand jumble of fakirs, sideshows, races, vaudeville exhibits, midways, balloon ascensions, base-ball games, firemen's parades and gambling, along with grange speakers, governors, dairy cows of national fame, birds of proud plumage and a hundred other attractions of the up-to-date fair, in some respects has been abnormal. Some great advances have been made, but not all of the transformation has been progress. Much thought has been given to the modern cattle show by the best friends of agriculture, while columns of newspaper literature have been printed about it.

My own thought has been directed towards that department usually given to comprehensive name of woman's work. Here the progressive spirit of the age has failed to make its full

impression, and development, whether for good or bad, has been less marked than in other departments.

If the farmer were to enter in this year's fair the counterpart of animal, fowl or produce which he took to the old cattle show, with no record of pedigree, feed or method of growing, he would find himself absolutely nowhere; though his exhibit would doubtless be ranked properly by expert judgment given deliberately. He could bank nothing on his being a friend of Deacon Smith, Farmer Jones and Neighbor Brown, acting as a committee and endowed with the weakness of human friendships, prejudices and enmities.

His wife, however, might carry the selfsame bedquilt or rug that her ancestors did and stand a good chance of drawing a premium. This condition may have exceptions; but a close study of premium lists and exhibits shows that the modern agricultural fair has developed faster in all other departments than in the household branch. The same time-consuming bedquilts of 9999 pieces, and ephemeral, gone-by fancy-work fads are listed as commendable accomplishments to be encouraged by money premiums.

It is decidedly non-progressive to encourage women and girls to spend time on what is neither useful or decorative or without money value.

Why, for instance, should a premium for "the best bedquilt made by a girl under 12" be continued as it is in ninety per cent. of lists? You would not expect the city girl to sit and sew together inch pieces of print. Her mother would teach her sewing by allowing her to cut out a simple garment by the convenient and cheap paper patterns and helping her over the puzzling places and stitches. If I think too much of my daughters' health to compel them to "sit on a cushion and sew up a seam" like the lady of long ago, why should other country girls grow round-shouldered slaves of the patchwork quilt. Yet one society in this State offers a one dollar premium for a single block of patchwork.

There yet exists a trace of the old notion that farmer folks must *be* different and *do* differently from other folks. It shows

plainly in the survival of certain things in fair premium lists. Why should the country home be encumbered with the dismal hair wreath in a glass case, the cross of shells glued on to a pasteboard foundation, or feather flowers dyed in bright hues? In reality very few are. Yet these old-time fads are still awarded money prizes in Massachusetts fairs. They are positively inartistic and should be eliminated.

Next to the things, the making of which is almost criminal waste of time, come the things which have a use but which the whim of fashion pronounces out of date. The premium lists should also be pruned of these. When lace-edged table covers of white linen are the exclusive fashion don't offer a dollar for the best table scarf embroidered with arrasene, for such went out of date before some of the present exhibitors of needlework were born; yet half the premium lists in the State carry this item along, conveying the idea that this work is still in favor. Most lists still have large premiums for white silk embroidery on flannel such as our mothers took pride in working but which is a minor accomplishment today.

Fortunately not all country women are deceived in such matters; as a rule, thanks to more steam and trolley cars, they go about more than ever before, and see what is being made and used. But such antiquity causes them to lose faith and interest in the hall exhibit. They get to thinking and saying, "Oh, there 'll be the same old lot of crocheting and baby socks." In this way some of their influence and aid to the fairs is lost. If the modern fair is to be improved woman's help should be secured, but it cannot be done by encouraging time-killing follies, by trying to perpetuate the fads of a former generation, or by recognizing the inartistic creations of more primitive times.

These are some of the errors and the result.

What shall we substitute?

A small proportion of premiums should be offered for the trifling decorative novelties, of present but not lasting favor. The greater part should be reserved to encourage work of real merit including the union of artistic and useful.

Wouldn't it be better to omit premiums for out-of-date picture throws, embroidered banners, painted placques, hair wreaths, lambrequins and that ilk, and encourage the making of more modern and of useful things. Take dressmaking for instance; many women wear a "store" wrapper, or an ill-fitting gown of their own creation as they work at their embroidery. The ingenuity and skill and the artistic sense required for the delicate fancy work, if properly directed, would fit and make a dress. More premiums should be offered for hand sewing and for well cut and made wearing apparel. One society is to be commended for its premiums for the best twelve or six pieces of hand sewing. Encourage the young girls by a premium for the best shirt waist, or its equivalent as fashion changes; this would illustrate all the stitches of plain sewing. The neatest lined and finished cloth skirt and the best made dress designed especially for housework would be other practical exhibits, from which of course the professional dressmaker would be barred out.

Women have been knitting golf stockings for several years but I fail to find these articles recognized in any premium list. Fire etching on leather and wood has been popular for several years and is capable of a high rank in decorative arts but it is almost entirely overlooked in the department of fine arts at the fairs. One who is skilled in the embroidery of household linen with monograms, crests and initials, and in making needle and bobbin laces, has an accomplishment which is a pleasant possession and may bring her substantial reward where a thousand yards of crocheted edging of the prevalent inartistic designs would yield nothing.

Work of commercial value should be encouraged. In connection with my editorial duties many letters come to me with the request that I help the writers to earn something by work at home. These letters are often pathetic and force one to close study of the problem involved. My question of what the writer can or wishes to do is usually answered by "fancy work" for which there is practically no market.

The farmer has been encouraged by the agricultural societies'

rewards to keep better cows and raise finer fruits; thereby he can cater to a critical or exacting market and get more money. His wife, in moments taken from household duties, has spent some of her energies over passing fads, usually without merit, or has followed a rut in which she has learned little of marketable value. The agricultural fair has been no help to her.

A somewhat extended movement is being started in the Middle Western States to make woman's work done at home in her spare time more remunerative. The marked preference for good hand work over machine-made products favors such a scheme. It originated with Mrs. Candace Wheeler of New York city who has no superior in her success in applying decorative to industrial art. She has established as a paying occupation in isolated or village homes in certain parts of her own State the making of portieres woven from scraps and pieces; these are a sort of artistic rag carpeting converted into draperies. I do not remember having seen a premium offered for these portieres yet they are found in the most elegantly furnished houses, bring a good price because they are hand made, and cater to the exclusive taste because it is about impossible to repeat the design exactly.

Rag carpets are among the old fashioned things which are not gone-bys, and through correspondence with Mrs. Wheeler I find that she agrees with me that premiums should still be offered for them, especially when woven in the mixed pattern and where no gaudy cheap dyes are used. There is a limited demand for this floor covering in houses which have one old-fashioned room; artists like it for studio floors when it is not of aggressive pattern; and in the country house it is always in keeping.

Mrs. Wheeler also writes to me of women who are making and weaving blue and white washable rugs for bathrooms and sleeping-rooms, which are excellent in every way and are salable. Braided floor mats, if well made and subdued in color, are always worth a premium, as they are serviceable and assume to be nothing more than what they are. With apologies to the one-fifth, what can be said of four-fifths of the drawn-in or

hooked rugs exhibited at fairs in which all beauty of design or color is lacking. Yet a New Hampshire woman, trained as a designer, has succeeded in working up a paying business in these rugs made under her own artistic supervision. There were many obstacles to progress in her undertaking by reason of an uneducated taste. Eyes accustomed to impossible cats and dogs, as well as to lilies and roses of poor design and glaring color, as wrought in the average home-made rug, were not prepared to look with favor on conventional patterns in subdued, æsthetic colors. She was compelled to work out her own ideas, and the adaptation of color schemes from high-priced imported rugs, upon a sufficient number of rugs for an exhibition. She had also to prove by the sale of, and orders for, her work that it appealed to people of artistic taste with means to gratify it. In other words, she had to break down the false standards which have been sustained by the premiums awarded at fairs for years and years. Surely the quality of home-made rugs might be improved at fairs if a judge could be found with backbone enough to discard all but the worthy. The premium list ought to help her by prescribing conditions.

There is room for improvement in the bread exhibit, which, as I first remember it, consisted of white and baked rye and Indian bread. Innovations came in steamed brown bread, graham bread and then cakes, until now the cake part is the leading part. There never was a New England farmer's wife but excelled in cake making; it seems to be a universal gift in this section of the country and very little money ought to be expended in encouraging greater feats in this line. It might be urged that good premiums are already offered for bread and that most women prefer to make cake and take greater interest in it. The remedy lies in creating more interest in bread making; *lack* of interest is the cause of so many poor bread makers. The mysteries of fermentation and chemical changes have not attracted their thought or study. It would be better to give three dollars for the best loaf of bread than one dollar for a cake, as is sometimes offered.

Does anyone doubt that housekeepers would take interest in an

exhibit where there was offered a sweepstakes premium for the best bread, and in addition three first and second premiums for bread made with home made, compressed and dry yeast? Add to this, distinctive premiums for graham and entire wheat, which are not the same although often classed as one. Then might come the various kinds of rye and Indian, rolls and biscuits.

The New England man loves pie even if pie is not an adjunct of the fashionable dinner. It may be daring to say that here in the great pie belt; the home-made pie is seldom well made, and a number of premiums for toothsome pastry would probably set cooks to experimenting until undercrusts were as light as uppers. A few societies make one or two additions to the articles named.

Accuracy ought to be encouraged in cooking exhibits; but in looking over the recipes which are sometimes required to be sent with them I seldom find one so complete that I dare to print it. "Sweeten to taste" or "flour to mix" convey no instruction. The written recipe should be as exact as a druggist's formula, and should always be required.

In this connection allusion is proper to the effort now being made to establish in connection with the national department of agriculture, a bureau of domestic science in which investigations as to methods for the preparation of food shall be conducted and the information printed for distribution in the form of bulletins. The movement started in Illinois and the advocates of this plan call attention to the fact that colleges are established throughout the country where every facility is provided for education in the *production* of food material; State fairs have generous appropriations and institutes are conducted for further consideration of this question. The best results of all this effort and expenditure may be, and often are, ruined by the ignorant or careless cook. The Illinois State fair introduced a department of domestic science in 1896 and continued it at following exhibitions. A domestic science committee had a large corn exhibit at the corn convention in Chicago.

Managers of fairs ought to keep in step with such movements and can much better afford to give less premium money for

decorative monstrosities, and add something for illustrations of what may be done to make fruits and vegetables more acceptable and nutritious as foods.

More attention should be paid to increasing the uses of New England fruits and vegetables. The wholesome apple ought not to be so largely supplanted by the orange. Who knows, for instance, what a prize offered for a new confection made from apples might bring out from inventive cook's experiments. Evaporation is a much easier method of preserving than canning. Yet beyond a few articles, which even the earliest settlers of the country prepared in this way, little success has been attained in saving products of the farm and orchard by drying. With handy stove evaporators there is ample opportunity to save some of the fruits and vegetables, which might go to waste if there was no other way of saving them than by canning.

Along with this might be added an exhibit of how the dried article would look and taste after the cook has done her work properly. Part of the popular indifference to dried food of this kind is due to lack of knowing how to restore the moisture without losing the solidified juices as they dissolve or without breaking up the more solid part into an uninviting mass.

No man cares whether he sleeps under a patchwork quilt of ten or ten thousand pieces, but it does concern him whether his dinner be good or whether what he provides is used to the best advantage. At least until the government sees fit to aid in spreading knowledge on this subject it appears to be the duty of fairs to encourage and reward better methods of feeding people as well as animals.

Not long ago, a man having wide knowledge of agricultural and horticultural interests, urged me to write more in favor of encouraging children to compete for prizes at fairs. Premium lists show a diversity of custom in this respect, and some have special prizes for school work. Theoretically there could be no better way to encourage nature studies and manual training. Even when not under the supervision of teachers or limited to school work the plan works to a charm. The boy raises a fowl, some choice berries, or completes a creditable bit of wood

carving, all, as the children say, "his own self." The girl carefully stitches an apron, or mixes and bakes her bread or cake without supervision and the slight expense of rewarding their effort is money well laid out. In some localities it is all the encouragement that they get for manual training.

But there is another side where the whole family combines to send its best in the name of the child, who thus learns a large lesson in deceit and falsehood, and if it secures a prize is encouraged to repeat the experience. I have seen a loaf of frosted, rich, fruit cake accredited to a child and given a premium; the written recipe attached was so indefinite as to have been no guide. One can easily imagine the child, working mechanically under direction of a practiced hand, hoping by this proxy to gain the coveted prize.

The best classification of children's work is that given by one society, which calls for herbariums of flowers, grasses and ferns respectively, collections of 75 and 100 specimens of wood, geological collections, agricultural and horticultural products, also cookery, sewing and the arts of wood carving, drawing and painting as taught in the public schools.

Leaving the details of the premium lists I would make a few general suggestions.

Let the standard in these classes of exhibits be so high that the award will mean something; if nothing deserves the first premium then it should not be awarded. The clause giving committees or judges the right to withhold any premium, if in their judgment none is deserved, means little to the average three people who distribute awards, and if but one lone chrochet tidy is entered it receives the first prize although it be a caricature of its kind.

The judge should be an expert whose opinion would count for something. A woman is not fit to judge needlework because her husband is a man of some local prominence or because she has a reputation as a good housekeeper. I have known good bread to receive no notice because an inexperienced judge "didn't like that kind." The judge for the exhibition of cookery should be a graduate of the normal class of some

cooking school of good standing. Such a person can detect the slightest overfermentation of bread or the smallest variation of texture in cake. I have in mind one such judge whose rapid but systematic decisions, according to a scale of points, were above question.

In no department is a qualified judge more needed than in that of painting, drawing and decorative design. Without an expert, false standards are made for those out of reach of the influence and advantages of art exhibitions and schools.

A problem for the management of fairs is the comparative value and claims of the professional and the amateur exhibitor. A list offers first and second premiums for ten to twenty different articles. The judge finds a large and beautiful exhibit of needlework, covering all branches specified in the list and a great attraction to visitors. She starts upon the task of judging, has a scale of points for shading of colors, setting of stitches, beauty of design and so on. If strictly impartial she must award every first premium to the exhibitor who is well known as a teacher or dealer. In her heart she believes that the award should go occasionally to the woman who has sent her one masterpiece made at home in spare moments and which falls but a shade lower than the work of the successful professional.

But the judge must not let sentiment influence the award. The professional's work is doubtless a great attraction to visitors and is an object lesson to those who do that particular kind of work; it is too valuable to be dispensed with because it tends to raise the standard of the exhibit both in quality and by the introduction of new ideas. On the other hand less skilled workers are apt gradually to withdraw their efforts because of the certainty of being outdone, for it takes courage to submit one's handiwork to the chances that await it under these conditions. A remedy lies in the larger societies offering separate premiums for professional and amateur work, and in the smaller ones either barring out the professional or giving a gratuity on such collections or exhibits. This leaves the money encouragement and the grading of prizes where it belongs.

This reference to the product of the needle may apply as well to the brush. In the art department a few societies already

discriminate between amateur and professional work. Copies and originals are classified and thereby comparatively just decisions are made. But this is an exception to the prevailing custom where clever copies of the familiar three horses' heads at the drinking fountain or a branch of oranges, worked out possibly under the supervision of a teacher, is given a premium while an entirely original study is passed by.

The tendency in all great expositions is to omit a distinctive department for woman's work. This came about partially by the wish of women themselves to earn, not the commendation of having done "very well for a woman" but the reward of being "best of all."

While the State, county and town fairs do not specially classify their hall exhibits as woman's work the general interpretation is such. A better classification would be Domestic Science, Industrial Arts and Fine Arts. The first would develop from the present few loaves of bread or cake and jars of pickles and preserves into an instructive exhibition of cookery, preserved and dried fruits and vegetables, appliances for household work, demonstrations of cookery, exhibits of table setting, household inventions and so on. Men could compete for premiums if they liked, and could have attractive and instructive exhibits as they do in food fairs and in the great State expositions.

The industrial art department ought to be guided towards what is of use and to the things that the world needs and will buy, while the standard of the fine arts should be kept as high as consistent with existing conditions.

All plans of instruction and entertainment are the result of evolution as the world has grown older and better ideals have advanced. The schools that were good enough for our fathers or for us, are not good enough for our children; the clumsy stage appointments of an old-time theatre would meet ridicule today; even the preacher has changed methods, if not texts, else he would be left alone with his eloquence. Why should the agricultural fair so often cling to primitive plans in that which should interest women and which could be of much profit and improvement!

9th February, A. D. 1899.

ESSAY

BY

JACKSON DAWSON,

OF THE ARNOLD ARBORETUM.

Theme:—Propagation of Trees and Shrubs.

THERE are many methods of propagation, the most natural one being from seed. Plants, as a rule, grow strong from seed and live longer than those which are grafted, and where it is practical to do so the growth of plants from seed is the best method; but there are exceptions to all rules and many trees, such as Willows and Poplars, grow as readily from cuttings and produce equally as good plants as those from seed. Species, as a rule, come true from seed, or nearly so, but there are many variations which we wish to perpetuate and these must be increased by other methods, such as grafting, cuttings, layers or inarching. In growing plants from seed it is important that the seed should be selected from good healthy plants, and if grown in a cooler climate than that in which you intend to grow them they are apt to be more hardy than seeds taken from a warmer climate to a colder one. If possible, this should be the reverse. We know for a fact that many evergreens from California and Oregon are not hardy here, while the same species from Colorado or other high latitudes are perfectly hardy here.

Picea Engelmanni, Abies concolor, Picea pungens, and the Douglas Fir (Pseudotsuga taxifolia), the latter which was imported from England, would not stand our climate, these being grown from seed collected in California and Oregon, and not until Dr. Parry sent seeds from Colorado did we have hardy forms of these trees in New England. At the present day all

seed of these trees for northern growths are collected on the eastern slopes of the Rocky Mountains, where the summers are hot and the winters are cold. Hence the necessity of having the seed from the best trees near by or from those grown in similar climates. Seeds should be as fresh as possible, and the sooner they are cleaned and sown the better results. Many seeds which would germinate the first season if sown as soon as gathered, would lay in the ground until the second season if thoroughly dried before sowing.

Of course when seeds have to travel a long distance they must be thoroughly dried or they are apt to mildew and spoil. Many seeds, such as Cherry, Plum and Peach, unless subject to hard freezing, will not germinate the first year. Many will not germinate until the second year under any artificial condition, and often seeds will lay in the ground three years and then germinate. It is well, if you have not the ground in the condition to plant, to stratify all seeds as soon as cleaned, that is, put them away mixed with layers of sand or earth and keep them in a cool cellar or frame until spring. When small quantities are used they can be put in small boxes and mixed with sand, or if large lots they can be stratified out-of-doors. It is well to have the sand or soil used fine enough to run through a sieve. By having different sized sieves the seeds can easily be separated from the sand.

In all large nurseries, where there are quantities of Peaches, Plums, Hawthorns, Cherries, Lindens and Junipers, the seed is mixed with piles of earth on the surface of the ground, stacked up, left covered with sods or boards until spring. Such seeds as Honey Locust and other hard and bony seed which have become thoroughly dried, should be treated with hot water (so as to swell before planting, otherwise they would come up scattered at intervals for several years).

The first consideration is what you desire to plant; the second, to have the seed as fresh as possible; and the third, soil and situation to plant in; the fourth is to know what depth to plant the seed and how long to wait for the seed to come up. In this sort of a paper it is hard to give many details, so that I

will touch on the most hardy of the different genera and leave the varieties for another time.

Maples, Magnolia, Horse-chestnut, Mulberry, Alders, Plane-tree, Birches, Amor-cork, Hornbeam, Oak, Hickory-nut, Plums, Chestnut, Willow, Catalpas, Viburnums, Redbud, Picea (Spruce), Yellow-wood, Abies (Firs), Hawthorn, Pines, Beech, Aralias, Ash, Barberries, Holly, Siberian Pea-tree, Tulip-tree, Cornus, Clematis, Bladdernuts, Euonymus, Snow-berry, Hibiscus, Hypericum, Ligustrum, Pyrus, Kerria, Roses.

SOIL AND SITUATION.

In selecting a place for the seed-beds the soil should be a deep rich mellow loam, avoiding gravelly soils or heavy clays. The soil should be well manured with good rotten manure a year old, then ploughed or trenched twelve to fifteen inches deep and well pulverized. All coarse stones and rubbish should be cleaned off so as to have the land in the best possible condition. If the land is full of weeds it would be well to manure heavy and plant one year with crops that would be well cultivated. Nothing tries one's patience more than trying to grow seedlings in a soil that is already full of weed seed. If possible, the land should be sheltered from the north and west by fence or hedge. If the seed is to be sown broadcast I should lay out the beds five feet apart with a pathway two and a half feet between the beds. This will give ample room to weed the beds from each side. If sown broadcast, rake the beds smooth and sow the seed thinly and evenly over the surface. If the seed is fine, raking them in with a coarse rake and rolling them lightly will be sufficient. If the seed is large, it should be covered about its own diameter. For myself I prefer to sow in rows eight inches apart, across the bed, especially if there is a large number of varieties and only a few of each wanted, or in long nursery rows, eighteen inches apart, if to be worked by hand, or from two to three feet if to be cultivated by horse-power. One reason I prefer the rows to broadcast is because they are much easier to cultivate.

Seed should never be sown when the ground is wet. The

soil at the time of sowing should be neither wet nor dry, but in such a condition that it can be raked without its clogging. If it is too wet many fine seed will scarcely come through, while if too dry the seed is apt to work out, unless covered deeper than desired.

A supply of water should be at hand, ready to be used on all lightly rooted plants during dry weather. It is also well to have lath screens to protect delicate plants from the hot sun. If in the fall we begin with the Oaks, as the acorns do not long retain their vitality (neither does Chinquapin, Chestnut or Beech); to insure success these should be put in boxes of earth or sand, as soon as gathered. If sown broadcast, the nuts should be scattered thinly over the bed and pressed down with the back of a spade or a light wooden roller and covered a little more than the diameter of the seed, which should be over an inch for the Beech and Oak, and two or more inches for the Hickory. Some prefer making shallow drills with the plough and sowing thickly. The Maples, with the exception of rubra and dasycarpum (these ripen in June); should be sown as soon as possible after gathering, otherwise they will not come up until the second year. The Ash must also be sown as soon as gathered, otherwise it will not come up until the second year. Carpinus, Ostrya, Cornus florida, Amelanchier, Celtis and Viburnums seldom come up until the second year. The Redbud, Kentucky Coffee-tree and Yellow Wood need to have boiling water poured on them, letting them stand for twenty-four hours, then take those that have swollen, which are considered fit for sowing, and treat the rest to a hot bath again. The Ailanthus, Catalpa, Mulberry, Birch and Alder are best sown in spring as soon as the ground is dry enough to work. The Red and White Maple, the Elm, and Betula nigra ripen early and should be sown as soon as gathered, and if well cared for make good plants the first year. Magnolias should not be sown out-of-doors until the weather becomes warm. The Holly seldom comes up until the second year. Such seed as that of Magnolias, Roses, Mountain Ash, Celastris, Viburnums, Amelanchiers, and all fleshy, pulpy seed I macerate in water and wash out,

and sow or stratify before they are dry. When seeds are sown in the fall, as soon as the ground is frozen cover the bed with a light covering of hay or pine needles, which will keep the ground from heaving and the heavy spring rains from washing up the seed. If closely looked after, the covering may be left on until the seed shows signs of germination, when it should be carefully removed. All seed-beds and rows should be kept free from weeds, and as soon as seeds are up the ground should be hoed or cultivated frequently. This causes the young plants to push more vigorously and makes them better able to withstand the drought. If the weather is very warm and dry the seed-beds should have a good soaking of water once or twice a week, and in the case of delicate seedlings they should be screened during the heated term or until the plants are deeply rooted, when they may be gradually inured to the weather. After the first of September all watering should be stopped and the plants should gradually be hardened so as to go into their winter quarters with well ripened wood. At the approach of winter those sown in drills will stand better if a plough is run between them, throwing a furrow against the stems. This keeps the young plants from heaving with the frost, and also keeps the water and ice from settling round the young stems, which often causes great injury. All the others should be mulched with leaves or short manure.

Most all deciduous plants should be transplanted the following spring if good shapely plants are desired. In my own work I sow most of my seeds in boxes, as I find it more convenient where I desire only a few hundred of a kind. They are far more easily handled and the plants, especially nuts and oaks, transplant more readily and with little or no loss. I call it the box system. I procure a lot of boxes at a grocery store, of as uniform a size as possible, for they pack better in a six-foot frame than various sizes. Canned goods or soap boxes are nearly equal in size. With two cuts of the splitting saw you have three flats about three and a half to four inches. With one-half inch auger I bore four or five holes in the bottom for drainage. For the finer seed I drain the boxes with broken crocks, with

coarse siftings of peat or sod, or any coarse material that will allow the moisture to pass off. Then I make a compost of two parts rotten sod, one of peat and one of sand, and fill the boxes with the compost and press down firmly. Sow the seed evenly and cover according to its size. On one corner of the box I plane a place, rub over with white lead, and write the name of the seed and date of sowing. This takes only an extra minute, and is of much value afterwards.

After sowing, the seed should have a good watering to settle the soil. The boxes can then be piled four or five deep in a pit, or placed in a greenhouse. If in a pit, as soon as the boxes are frozen, they should be covered with leaves to keep them so until spring. If no pit is available, they may be piled in a sheltered place and covered with leaves or other litter. In case of the seeds which take one or two years to germinate, it will be well to cover the boxes with boards, so that squirrels and mice may not get at the seed. About April, put the boxes in frames where they can get the morning sun, but not in a shady place. Cover them with pine needles or sphagnum moss, which will save a great amount of labor and watering. Winter the first winter in a deep pit, slightly covered with leaves or meadow hay. If no pit is available, three or four inches of pine needles or leaves placed over them will keep them in good shape until spring. But on no account should the boxes be left without protection, as the young seedlings will suffer very much in so little depth of soil. These boxes are from fourteen to sixteen inches square and will hold from 100 to 200 plants, according to their growth. The conifers, such as the Pine, Spruce, Larch, Cedar and Hemlock, require more attention and care. It is almost impossible to grow many of the finer kinds in our New England climate out-of-doors, although with care many of the ordinary conifers can be grown out-of-doors. The seed may be sown thinly, in rows or broadcast, about the 20th of May, slightly covered, certainly not more than twice their own diameter. If sown broadcast they should be lightly raked in and the bed rolled with a light wooden roller. The beds should be covered with screens to protect the young plants, partly from the sun

and partly from the birds which often pick up the young seedlings which are just breaking ground. If no laths are handy, the beds can be covered with Pine, Hemlock or Cedar branches. As soon as the young plants begin to appear the branches should be raised some inches above the ground. It is a good plan where pine needles are plenty to cover the beds thinly between the rows with them. This keeps down the weeds and saves much watering.

The critical time for young conifers is the first three months of their existence, until they have made a crown bud. After that time there is very little danger. A great quantity of rain or a scorching sun will often prove fatal to thousands. Stirring the soil after heavy rains or sifting dry soil among the beds of over-wet seedlings is a great benefit. After the muggy weather of August is passed they require very little care for the rest of the year. Pines should not stand more than two years in the seed-bed unless sown very thin. The White, Black and Norway Spruce will hardly be fit for transplanting until the second year. The Larch and Arborvitæ should be transplanted after the first year. The seeds of Juniperus and Taxus do not germinate until the second year. The Stone Pines lie on the ground until the second year, although a few may come up the first year. The seeds of conifers, with the exception of the Silver Firs, will, if kept in a cool dry place, retain their germinating powers for a number of years. White, Scotch and Austrian Pines and Pitch Pines come up fairly well after being kept five years, and might possibly have been several years older when received.

I have found by experience that too much moisture is fatal to the germination of old seeds, and especially resinous or oily ones. If sown in a soil barely moist and covered with dry sphagnum to prevent the escape of the little moisture in the soil, many will grow, while if treated in the ordinary way, the seed will swell and then rot.

Many shrubs and trees can be grown from cuttings of old and new wood, also by cuttings of the roots. Many trees and shrubs otherwise hard to propagate by cuttings of the hard or soft wood are easily propagated by pieces of the roots. The

Elm, Ailanthus, Plum, Pea, Apple, Hawthorn, Cherry, Mountain Ash, Acanthopanax, Aralia, some Cornuses, Philodendron, Xanthoceras sorbifolia, Nyssa multiflora, and others are examples. Most of the shrubs are easily propagated by soft wood, that is the growing wood, in summer-time under glass, while most shrubs root readily from the young growth but few of the trees will. The trees to root most readily from hard wood are the Willows, Poplars and Plane-trees. Of the shrubs that root most readily from hard-wood cuts are most of the Loniceras, Hydrangea paniculata type, the Forsythia, Philadelphus, Tamarack, Privet, Spiræa, Sambucus, Rosa setigera and Rosa lucida, Carolina, mannetia, multiflora, repens and Wichuriana are the most easily rooted among the Roses; many of the Roses it is almost impossible to grow from hard wood. Ribes, that is currants, and Gooseberry, Cornus of most species, a few of the Viburnums, such as tomentosum dentatum and varieties, Actinidia, most of the Grapes, Althæas, Wigelias, Deutzias and some others. Many plants root much more readily from the green cuttings in summer than by hard-wood cuttings, all the Viburnums, Cornuses, Ailanthus, Privets, Iberis berberis, Euonymus, Spiræas, Actinidias, Gordonia, Syringa Chinensis, Caryopteris, Daphne Mezereum, Deutzias, Philadelphus Stephanandra, hybrid Lilacs and others.

Fall is the best time to make hard-wood cuttings, although if they are taken any time up to the middle of March they will do well. The best height of most cuttings is five or eight inches. Willows and Poplars may be much longer and thicker than those of the shrubs. Good clean new growth of the previous year, well-ripened, makes the best cuttings. I always like to cut the cutting smooth just below an eye. Although it is not always necessary, as soon as made tie up in bundles, say forty or fifty in a bundle; if the bundle is too large they are apt to heat. I usually use copper wire to tie them as string is apt to rot, and then follows confusion if you have many varieties. If your ground is dry and well sheltered the cuttings may be planted in the fall, otherwise it is best to heal them in winter, the butts near the surface, and cover the whole several inches deep; and

over all a good covering of manure or leaves to keep them from freezing too hard in the spring. They can be planted out in nursery rows or frames. If in frames, the rows need not be more than eight or ten inches apart, and the cuttings three or four inches apart in the rows; if in nurseries, the rows may be three feet apart if to be worked by horse-power, less if otherwise. The soil should be deep and good, and if heavy or wet well drained. Plant the cuttings to within one or two eyes of the top, and if the weather is dry they will require watering several times until well rooted. Keep them well cultivated and most of them will be good plants by fall, and at the end of the second year fit to plant permanently. Where cuttings are healed in inverted, as I have spoken of, they callous much quicker and the tops are not so liable to start into growth so quickly as they would otherwise, thus giving the cutting great advantage over the one which is planted at once in the proper place without this treatment.

In the growing of soft-wood cuttings a greenhouse or frames are necessary. They can be grown in boxes, pots or on a solid bench. I prefer boxes three to four inches deep, and well drained; they are much handier than having the cuttings in the solid bed, as they can be moved to different positions if needed. Also if necessary they can be transferred to frames as soon as rooted, to harden them up without disturbing them. The soft cuttings will need much more attention and care than the hard ones will, but in many cases I think they pay the best.

The time for putting in soft-wood cuttings is from the first of June until the last of September, the sooner after the first of June the better, as the weather is not so hot then, and the early rooted plants in many cases can be planted out in frames and make good strong plants before frost. Make the cuttings two to three inches long. Lath screens are needed for the outside shade, on inside white cotton cloth. The cuttings should never be allowed to wilt, and when collecting them it is always well to have the watering-can with you. Put in cuttings from one to two inches apart, according to their sizes. Give a good watering to settle the sand, and

shade during hot sunshine for the first week or ten days, when you can gradually dispense with the inside shade, but will still need the outside screen in very hot weather. Damp down the floor several times a day to keep the air moist. In growing plants from root-cuttings the roots are to be cut up in lengths of from two to eight inches, according to the habit of the plant. They can be tied in bundles, right end up, and laid in damp sphagnum moss until they show signs of growth, or planted in beds, boxes or pots of sandy soil. They need to be kept moist but not too wet, until they have started; they do not require shading as soft cuttings, but need the same treatment as growing plants. As soon as large enough they need transplanting and care. Other shrubs, like some of the Roses, some Spiræas, Lilacs and others have stolons, tubers or underground stems; these can be cut up and treated the same as root-cuttings.

Many evergreens can be grown from cuttings, such as Thuya retinosposa, Cedar, Junipers, Dwarf Spruce, Cephalotaxus and Yews. It was not thought possible a few years ago to grow Piceas from cuttings, but by selecting the young sides growth Picea Engelmanni and pungens can be grown from cuttings of their own wood. The best cuttings of most conifers are the ripened upgrowth of the last years taken off with a heal on it, that is for the Spruces, Firs and Yews. The Junipers, Arborvitæs and Retinosporas take the small side branches. The best time to take off cuttings of evergreens is in the fall and early winter just before the hard frosts begin. While they will root at other times, the more difficult ones are best taken in the fall. When first put in they need to be kept quite cool until they callous, when more heat can be given them. The time of rooting varies with the species, many of the Arborvitæs and Retinosporas rooting in a few weeks and some of the Junipers in a year or more. The cuttings should be put in well drained pots or boxes, or in the case of a large establishment a whole bench can be reserved for them. The cuttings in most cases should be small, not more than a few inches in length. Evergreen cuttings are impatient of too much wet; nothing will rot them quicker. A temperature of 45 to 50 is high enough until they

are well calloused. While they do not require as much shade as soft cuttings, a little shade the first few weeks is beneficial. After they are well calloused they will not need any; after having rooted their treatment should be the same as that of other plants.

Many plants that are difficult to propagate by cuttings and are wanted on their own roots can be had by layers. This is probably the surest way for an amateur, but it is slow; but by layering, many plants are had on their own roots which would be almost impossible to get any other way. Layers are branches of trees or shrubs either twisted or cut half-way through and buried in the earth several inches, but not detached until they are rooted. Clematis, Magnolia, Rhododendron, Rose, Maple, Lindens, Halesias, Quinces, and in fact almost any plant can be layered. Some root easily in a few weeks and others take several years. Some layers, such as Clematis, Grape-vines and Wistarias, can be layered at every few eyes as fast as they grow, but this kind of layering needs to have the sap checked at every place. You put it in the ground either by cutting half-way through on the stem or twisting the branch so as to check the flow of the sap. In most of the nurseries abroad, and some in our own country, layering is carried on to a great extent. The part of the nursery devoted to layering is usually called the stove ground. Here two plants or sometimes several are planted in groups three, four or more feet apart and layered every year or every other year, as the case may be. Young clean wood of the previous year is usually considered the best, so the plant is grown and pruned so as to produce as much straight growth as possible; they are then bent down, turned or twisted or not, as the case may be, and covered up with soil, and if the growth is too rank the tops are pinched or pruned so as to regulate the sap. In very dry seasons or in the case of choice plants these layers are kept well watered and cultivated. It is not always necessary to have a stove ground, for any branch or vine can be brought down and the soil and conditions made good around it, and success is sure to follow. The Magnolias, Maples, Rhododendrons, and other hard-wooded plants usually have to remain

on the parent plant two years, while Clematis, Grapes, Roses and other quicker rooted plants are cut off from the parent plants in the fall and healed in till spring or planted in the nurseries. As soon as the rooted plants are taken from the stools, a good dressing of manure is spaded in around the mother-plant and it is pruned and trained for another season's growth. Layering can be done any time, but spring or early summer is the best time. By layering such plants as Viburnums, Cornuses, Hydrangeas, Loniceras, and others, salable plants can be had in one season.

GRAFTING.

To go into the details of grafting would be more than one could do in a short paper. All trees can be grafted, and it is by grafting that many curious forms of trees are perpetuated, as well as most of our fruits. Many old orchards can be regrafted with new species or varieties, thus renewing what otherwise would be of no benefit. By grafting, weak varieties can be made stronger by grafting on a more vigorous stock; others can be dwarfed. New varieties can be tested by top-grafting on old trees, and seedling fruits be brought to early bearing by the same process, thus saving years of time. To grow an apple or pear from seed to fruit requires a great number of years, but by top-grafting on old trees only a few years. Thus you can quickly find out your work of hybridizing, and if the variety is worth anything whole orchards of it might be in bearing condition before the original plant was. It is not well to graft where a tree can be produced equally as well and quickly by other means. As I said before, I do not think grafted plants live as long as those on their own roots, although there are some cases where grafted plants have done much better than seedlings and are less liable to disease.

There are many kinds of grafting, I think Baltet gives nearly fifty, but they are all a modification of one another, and four or five ways would be all that is necessary in practical work. Almost every propagator has his favorite; still those methods practiced by skilful propagators are best, and may be summed up

as follows: inarching, bottle-grafting, cleft-grafting, side-grafting, crown-grafting, splice, tongue or whip-grafting, root-grafting and veneer-grafting. The best season for grafting outdoors is in the spring, when the sap is in motion, from March to June; under glass, with half-ripe wood, from August to the last of September; and December to the last of March with dormant wood. Midsummer grafting either in or out doors is not a success. In all kinds of grafting it is better to have the stock started ahead of the scion. A calm atmosphere and a warm temperature is more conducive to success than a cold, wet one. The tools necessary are a good saw, budding knife, grafting iron, pruning shears, a bunch of raffia or wax cloth to keep the grafts in place, and grafting wax to cover the wounds with and keep out the water. All scions should be cut before the sap begins to flow rapidly, from January to the middle of March. Many plants with slender stems are injured by freezing; these should be cut in the fall before heavy frosts and kept in sand or moss in a cool pit or cellar. For future use I find this especially applicable to hybrid Roses when the wood is wanted for winter use. A great loss of grafts is sure to be the result if the wood is not thoroughly ripened and collected before being hard frozen. All scions, if possible, should be of medium growth and of well ripened wood a year old. In some cases, such as Oaks, Hickories, Birches and Beeches, two and even three years old wood often takes better than that of one year old.

Inarching, or grafting by approach, is without doubt the most ancient of all grafting methods. From time to time Nature gives us examples of it in roots or trees that have become united where they have been bruised or pressed together. Man was no doubt quick to perceive and take advantage of this hint, and when once tried, improve upon it. A few years ago almost all our Camellias, Azaleas and other hard-wooded plants were worked in this way and in many continental nurseries it is still in use. The time for inarching out-of-doors is from early spring until July or August, while the tree or shrub is in active growth, and as the scions are still attached to the parent plant they can be inarched in either a woody or herbaceous state. The sim-

plest method is to remove from both stock and scion a thin slice of the bark and —— from two to three inches long, then bringing both cut surfaces together in such a manner that they will fit exactly, tie firmly with bass or raffia and cover the wound to keep out the air, although this is not always necessary.

Another kind of inarching is similar to tongue-grafting. An incision is made in the stock and the scion, and the two are bound together. In grafting by approach the trees or plants must be in close proximity to each other. The plants to be worked must be either planted around the stock tree or in pots and so arranged on stoves or stands as to be easily brought in contact with the branches of the stock tree. When the graft has taken hold cutting it from the parent stem is an important matter and should not be done too hurriedly. Make a small incision at first, increasing it from time to time until the final separation, which may require several weeks.

Bottle-grafting is only another method of grafting by approach. The lower end of the scion is inserted in a bottle of water to keep it in good condition until the cut surfaces are united.

Cleft-grafting was practiced at a very early date and is a method much in use now to top-graft old trees in orchards or to renew individual trees as well as young stock that have become too large to bud. In cleft-grafting the stock is cut off with a saw at a point at which to insert the scion, then smooth off the surface, then with a grafting iron or knife split the stock through the centre, being careful to divide the bark at the same time so as to leave the part smooth. The scions are then cut wedge-shaped and fitted into the cleft one on each side, making sure that some part of the bark may come together. In large stocks it is not necessary to bend the graft before watering, but in shorter ones it brings the points in closer union. March and April are the usual months for grafting out-of-doors.

Side-grafting. This term is applied to a number of processes of grafting in which the head of the stock is not cut away. The most simple side-graft is that in which the scion is cut with a long splice perfectly smooth and thin to the bark: then from this stock a thin strip of bark and wood two or more inches in

length is cut. Fit the barks exactly together and bind firmly. This is a favorite method of grafting Azalias and Camellias, and should be done under glass.

Crown-grafting is very similar to cleft-grafting. It is practiced in spring as soon as the bark is easily separated from the wood, the stock being headed down several weeks before the time of grafting. The scions should be cut with a flat sloping cut on one side, but instead of splitting the stock the bark is divided from the top downward and lifted as in budding. The scion is then inserted under the bark. A small implement of wood or ivory made in the form of the scion can be used to advantage in preparing a place to insert the scion.

Tongue or whip grafting is the method most commonly used in nurseries. For grafting young fruit-trees where the stock and scion are nearly equal the scion is prepared with a long sloping cut and the stock in the same manner. A small cleft or split is made about midway of the cut portion of both stock and scion; these are joined together and bound with waxed cloths, then healed in boxes of sand or earth and planted out in spring, leaving one eye above the surface.

All methods of grafting can be used on root-grafting. The Peony, Begonia, Wistaria, Rose, Clematis, Dahlia and many others can be successfully worked on roots.

Side-grafting is one of the best methods of propagating hard wood under glass and can be practiced from November to April and from August to October. In this mode of grafting all plants should be potted the spring before. In grafting select a smooth place on the stock and with a sharp knife make a slight cut downward in the stock and slightly into the wood, then insert the blade two or more inches above, cutting off a thin slice of the wood down to the cross cut. A corresponding slice is taken off the scion. They are then fitted together so the two meet, tied firmly together and placed in closed frames in the greenhouse slightly sprinkled overhead when necessary. The frames must be kept closed the first few days, but as soon they begin to unite more air must be given and gradually harden them off.

Budding consists in taking a bud with a portion of bark

attached to it and inserting in some portion of another tree. In order to do this a longitudinal incision is made through the bark of the stock to the wood; a cross cut is then made at the upper end, forming a letter T, into which a bud previously prepared is inserted. Some remove the inner bark and some retain it. I do not think it makes much difference. The best buds are those in the centre of the stem. As soon as scions are cut the leaf-blades should be removed, leaving a small portion of the leaf-stalk, which facilitates the handling of the bud. When the bud is fitted bind it with bass above and below, leaving only the bud and this leaf-stalk exposed. Most of our nurserymen practice budding more than grafting as it is a much cheaper way of getting up stock than grafting.

In the propagation of plants by grafting it is fully as necessary to know the kinds of stock to work on as it is to know how to perform the operation. All Pines with five needles, like Cembra pervifolia and others, do well on P. Strobus. The Scotch and Red Pine will do for all the other Pines. Picea pectinata and P. balsamea will do for the Silver Firs, Retinospora and Arborvitæ for all the varieties of the Arborvitæ Thuja, common Hemlock for all its varieties, Red Cedar for all the Junipers, common Larch for all Larches, Euónymus Europeus for all Euónymus, the Locust for all species of Robinia, Caragana Aborescens for all Caraganas, Viburnum Dentatum and Opulus for all Viburnums, Ulmus Compestris for all English Elms and Ulmus Americana for American varieties, Quercus Rubra for all Oaks, Betula Alba for Birches, English Hazel for all species and varieties of Hazel, Mazzard Cherry for Standard and Mahaleb Cherry for Dwarf, Prunus Americana and Mirabelle make good stock for all Peaches, Plums, Nectarines, and Apricots, Pear for standard Pears, Quince for Dwarf Pears, Clematis Flammula and Paniculata for all Clematis, Dwarf Magnolia Tripetala and Acuminata for all Magnolias, Honey Locust for all species and varieties of Gleditschia, Vitis Labrusca and V. Aestivalis for Hardy Grapes. Pyrus Toringo is the best stock for all flowering Apples. There are others that need special stocks, but I think this list serve for most of the plants in this section.

2nd March, A. D. 1899.

ESSAY

BY

MRS. DELIA F. COREY, NORTHBORO, MASS.

Theme:—The Early Education of Children.

IN attempting to say anything on this subject, I realize that many great minds and hearts have given their best strength to it, and what can I hope to do with so great a theme save to bring together the results of the investigations of others with perhaps a few thoughts of my own! The child is a being of three-fold nature, and must be treated as such in our efforts to bring him to most complete maturity. Considered and developed as either a physical, an intellectual, or a moral being simply and the result is a deformed thing pitiful to see.

I believe the tendency of the present day is to treat the child as an intellectual being simply. Public instructors and educators seem anxious to learn new methods of instruction and to acquire greater skill in developing the mental power, and but little is said of the physical, and less of the moral, nature. Mr. Anagnos once said in a lecture that from what he had learned of our schools he was convinced that American children were hurried into and through subjects that they could not digest in their school life; and it is true that we begin the process of training with our little ones while they are yet babies, sending them to kindergarten at any age between three years and five and continuing till, as we say, they are finished—in academy or college. Many of our girls are so nearly finished in our high schools that it is rare to find one whose bodily health has not become somewhat impaired; at least, as we say, she has become

nervous. Does it seem as if Whittier could have referred to American girls when he wrote of girlhood

> "With its solid curves
> Of healthful strength
> And painless nerves."

As a race the Americans have developed a nervous energy, perhaps by generations of living in this country that has proved a splendid possession, not only in the development of the *country* but of the *race*. We need not be surprised, then, at its appearance in the children, but we must remember that, unduly excited, it will react upon a feeble or immature body to its injury. Do we act wisely in our attempt to follow the sturdy Germans in providing kindergarten schools for our nervous American babies?

It seems to me that a good wholesome letting alone, as far as mental stimulation goes, during the first seven or eight years of life might be a benefit to us as a people. Such a course must result in fewer pale, puny, little children in our schools, fewer delicate, nervous boys and girls, and stronger men and women. The malady common to us, known among foreign physicians as Americanitis, would certainly receive a check. It is exceptional to find a strong, vigorous mind in a feeble body. When shall we lay the foundations of health and strength if not in childhood?

By my own observation I have found that a delicate child may be made strong by insisting upon abundant sleep, nourishing food, an out-door life, as far as our climate admits, and merry companionship during the first seven years of life, no intellectual stimulus pure and simple being allowed. A *healthy* child by this course lays the foundation of strong, vigorous maturity. It is generally believed that keeping the child from school till eight years of age makes him backward in his school work, but I am convinced that this is not true. A child of average ability, eight years old, easily takes the first two years' work in one year, and a quick, bright child can take the first three years. He is generally able also to combine the third and fourth, or fourth and fifth years.

During the time under eight, the child, though not in school, need not be idle. He is "near to nature's heart," and all that she has to reveal to his bright eyes and his active fingers are very real to him. Many and valuable are the lessons she will teach him on the beauty and sacredness of the life around him that will influence him all his subsequent life. The little child will learn much if left entirely to himself, but if a lover of nature can be his companion much more real good may be accomplished. It seems to me that it is not *necessary* that the teacher in this case shall be *proficient* in natural science, though better so, but it *is* necessary that he shall have a nature-loving heart. While a child looks upon a bird as something to call forth his skill in throwing a stone, or rabbits and squirrels as things to be trapped, beetles and caterpillars as something horrible, he is at variance with nature; he cannot understand her message. "Eyes has he, but they see not."

I have seen children rush to their teacher, a butterfly or wounded bird crushed in their little hands, with the air of a hunter bringing in his game, but when the teacher has taken the little creature, smoothed out the ruffled wings with tender hands and explained that it was suffering, the little man or woman was immediately anxious to do everything possible to relieve the pain, often much *affected* because of the injury done.

I fear that parents often underrate the value of teaching of this kind in the formation of kind and gentle traits of character.

The child may learn much of the character and habits of birds, insects, and flowers without knowing a technical term; and habits of keen, accurate observation may be formed that will prove invaluable in after life. It is a great thing to start right in life, in harmony with the environments in which God has placed us. When a little child has learned that the same great God that created and loves him, also made and cares for all about him, even the feeblest and tiniest; that life is a wonderful, a sacred thing to be guarded, not destroyed,—he is in harmony with nature and nature's God—he is ready for life. This truth may be and I think, *is best learned* under *eight years of age*, without greater stimulation of the intellect than is conducive to

the best physical development. It will be observed that all out doors is the schoolroom, that these fundamental truths come from his observations made in playtime, and that there is no suggestion of a task to be done. This kind of nature work should be carried on through every year of school life, with more and more attention given to details as the student advances. This kind of original investigation is invaluable in the formation of strong, self-reliant character. We take our pills as they are prepared for us, sugar-coated often, that we may not realize what we are taking, but the eternal truth cannot be taken in doses prepared by another, but in order that it become our very own, and really add to our strength, we must by our own efforts gain it.

In our town, we try to interest the children in the birds and flowers. We have those among our citizens, prominent among them Miss Edith Barnes, who addressed this Society recently, who are able and willing to give time for bird walks, which our teachers generally attend; and they, in their turn, take the children on similar excursions. Thus they become quite enthusiastic in watching for the return of our little songsters and in studying their habits during the summer. Perhaps the children are equally anxious to search fields and wood for wild flowers. I believe this an effort in the right direction, encouraging original investigation, and beneficial to the health.

Right here, perhaps, it will not be amiss to say that I most heartily approve the efforts of this Society in encouraging the study of our wild flowers by our women in their homes. I have been delighted to see two of my neighbors, young women, mothers of children, roaming over woods and fields with flushed cheeks and shining eyes, in search of the daintiest and rarest of our lovely wild flowers. And they took prizes, too, *several* of them.

I also approve, as a means of education, of the attempts of this Society to encourage children to cultivate flowers. I don't know what plan has been followed, but it seems to me I should try to have the gardening extremely simple in the beginning, taking the hardiest plants, like nasturtiums or petunias. If my

own little one were the gardener, I would see myself that she did not fail to have good results at first. It is so discouraging to a child, and, perhaps, to an adult as well, to fail; so hard to begin again or to love the work. The lesson learned of the necessity of being faithful every day are invaluable. The plant, then, that gives us the best return for a small outlay of time and skill,—a vine, a shrub, or a rose-bush,—anything that may be his very own to cultivate, and will probably do well in the care that he is able to give it, in my judgment, is the best for a beginning.

In our own family, we have given the boys a small hotbed, using small-size sash; or a piece of ground for a garden in which they raise lettuce and vegetables, send them to market and receive the returns for their own use. We have thought that this is a valuable experience, for several reasons that doubtless occur to you, as a means of education.

It is very important that our little children form right ideas of things—that they get the true view. We quote glibly enough, "As the twig is bent the tree's inclined." But when does the child cease to be a tender twig that can easily be bent? Does it not become more and more difficult to influence him after he has become associated with other and older children? You know how surprised and grieved a *little* boy is as he sees the older boys torment a dog, stone frogs, pull out the legs of flies and beetles, and the hundred and one things of that sort that children see opportunity to do. It is sad to see how soon even the tenderest-hearted little fellow among them ceases to be shocked and falls into line with the young ruffians. This is the beginning of the hardening process, extending through all the phases of ill treatment of companions and elders, disrespect for law and order, ending, in some cases, in the village or city hoodlum, with all his possibilities.

Now a little one, five years old—the age at which children are allowed to enter school—and a majority *do* start in at that age, has had neither time, ability nor opportunity to get any very definite conceptions of his relations to things about him. He is now preëminently a tender twig. If only he may be

trained upward into the sunlight of truth and right! Think of the power that comes into the hands of the older children whom he meets on the playground, to turn his life toward good or evil. (I do not mean that his character will be formed during the next three years, but I do believe it will receive a bent that will probably be followed.) How much of the time is their play supervised? Who knows what that older child is telling the little ones as they cluster around him in the sunny corner? I believe the city and village school-children are more fortunate than those of the country district-school in the respect of supervised playyards. These "ragged beggars sunning," generally in some secluded spot, often with no human habitation within sight or hearing, afford every opportunity to the bad boy or girl to vitiate the whole school. Thus isolated, the children are shut in to the influence which there prevails, whether good or bad. The homelife may be narrow, but there is little chance of help reaching them from the more cultivated centres. The closing of these outlying schools and bringing the pupils to the village is a blessing to the country children living on the outskirts of the town, in my opinion.

The village hoodlum is getting to be as grave a problem as the city tough, fully as much to be feared. Often he is not a foreigner, but a descendant of the first settlers, having had the advantages of country life and district-school training. Cowper may sigh "for a lodge in some vast wilderness," but it certainly is not a good place in which to bring up children, or to build a district schoolhouse. The attempt of some cities to provide playgrounds for the children during the summer by opening the schoolyards is good. It is *very* good, because suitable persons either volunteer or are hired to care for the little ones and oversee their play.

An ideal plan, it seems to me, for the early education of little children, that could easily be carried out in the country, but in the city would be a little more difficult, would be to have them enter school at about eight years of age. In the city, parks reasonably accessible to the children should be provided, not beautifully-kept parks, with smoothly-shaven lawns decorated

with signs "keep off the grass," nor gravelled walks, nor rare plants necessitating the employment of a gardener, but a piece of land like that used for pasturage in the country. A wall should be built around it that would secure quiet and seclusion as far as possible. In it should be planted wild flowers, in such nooks as would best suit each variety, and there they would blossom through spring, summer and autumn,—from arbutus to goldenrod. Trees should be set out,—Maples, alders, beeches, pines, birches,—*shrubbery*, such as we find growing by the country roadside; bushes and vines, such as we find in pastures. There should be water—either a pond or a brook—in some part of it. In short, it should be as full of wild plant and animal as well as insect life, as by any contrivance it could be made.

This could not be a public place, but must be kept as carefully from depredators as a schoolroom. During as many days of the year as possible, the little children under eight years of age should come in classes of a dozen or twenty, at stated times during the day, for an hour or two's walk and talk with a teacher provided by the school board. Any teacher who failed to awaken the interest, sympathy and love of the little ones for the life about them should be considered unsuccessful.

This plan could be followed in the country without the expense of preparing a park, as everything is there arranged by Mother Nature in the best possible manner. When a child has become acquainted with *life*,—animal, insect and plant,—has really seen it in the right way, has learned that animals suffer pain and fear when we are not gentle in our treatment, that they love and trust us when we are kind, that insects suffer, that their little life is easily destroyed, that plants are living beings, that with careless hands we may tear them from their home and they will die,—the thoughtless, even cruel treatment that so often helpless life suffers at the hands of children will be impossible. I have heard that the Romish Church says, "Give me the children till they are seven years of age and any one may have them afterwards"; and I fully believe that we should seize that most impressible period of a child's life to teach him

the truth concerning the rights and privileges of the life about him and his relations to it. Ordinarily, the child, in the first grades of public schools, is taught of animals by the use of pictures, and while pictures are much better than nothing, they are entirely inadequate.

It is possible for a little child to love the horse, cow, sheep, dog, or other animal in the picture, and to be entirely unacquainted with the living creature. Besides, while we are doing our best to teach the wonders of frog life, from the egg to the wonderful changes to froghood, Billy Jones has taught the boys always to approach the frog pond with stone in hand, to watch patiently for them and to aim well; in short, they have become persuaded that the frog has no other purpose in living than to furnish sport for the boys. Now B. Jones has a great advantage over the teacher, who has the pictures simply, for he presents the real object, rouses the keenest interest and enthusiasm, and thereby makes an indelible impression. Now, we want to take the little fellow while B. Jones scorns him, while his legs are too short to keep up with the fellows and his hand too little and weak to throw a stone with any chance of hitting anything that he aims at; we want to take him to the park to become acquainted with mamma frog and all the taddies, watch all the wonderful changes, and *develop* that interest that he will immediately feel in them.

You will readily see that domestic animals—the cow, horse, sheep, goat—could easily be made to feel at home in the park for a few days at a time, and the children would have opportunity to become acquainted with them. Foxes, raccoons, squirrels, mice, rabbits, etc., could also be accommodated in cages till the children could see and know them. Our birds, too, I am sure, would find their way to such a spot if only they could, in some way, be protected from the belligerent English sparrow. I know that the fairy tales illustrating kindness toward animals would be appreciated and enjoyed by children of this age, and they would be very helpful, too Plain, hard facts do not appeal to these little ones so strongly as facts clothed in imagery, be it ever so simple. To speak of a pansy,

for instance, as bright, beautiful, many-colored or fragrant, does not appeal to a child as to speak of it as a dear little face looking up into his.

As a teacher looks into a row of little faces, innocent, trustful, he realizes, as perhaps never before, the meaning of the words of Jesus, "Of such is the kingdom of heaven." How honest, earnest, consecrated the teacher needs to be who has the privilege of wielding so powerful an influence over the life at its beginning. Is there ever a more favorable time to bring them to the truth as expressed in the life around them, or, is there anything that appeals more strongly to the awakening consciousness of little children?

8th February, A. D. 1899.

ANNUAL REUNION AND SOCIAL GATHERING.

59th Anniversary of Organization and 57th of Incorporation.

Reception Committee, *President* O. B. Hadwen, *Secretary* A. A. Hixon, Col. Samuel E. Winslow, Calvin L. Hartshorn, Maj. F. G. Stiles, Hon. Nathaniel Paine, Charles Greenwood, Frederick H. Chamberlain, Frederick A. Blake of Rochdale, Hon. Henry L. Parker, H. F. A. Lange, John C. MacInnes, A. Swan Brown, Hon. F. A. Harrington, Hon. Ellery B. Crane, Prof. C. F. Hodge, Joseph Jackson, Henry B. Watts and John B. Bowker.

The guests and members began to assemble at six o'clock and they were welcomed by the reception committee in the library room, where the distinguished personages assembled, the rest gathering in the main hall, where Bicknell's Orchestra played a concert.

At 6.30 President Hadwen and Henry L. Parker, toastmaster for the evening, took their places at the head of the long column of people and marched up the stairs to the banquet room above, where C. S. Yeaw served the supper. The speakers and guests of honor took seats at a table along the north side and the other tables, at right angles to this, were filled by the main body of the company, which overflowed into the anterooms.

PRESIDENT O. B. HADWEN

began the after-dinner exercises with a welcome to members and guests. He gracefully drew a picture of the place Horticulture and its kindred arts have played in civilization.

He said in the past almost everywhere rough nature has been subdued and the earth has been moulded into forms of beauty. The roadsides and the homes of almost all classes testify to the increasing love for the beautiful in nature and show its ennobling influences. Each successive year shows a gratifying progress in the towns which surround our city.

I feel we are reaping no scanty harvest from the seeds of good works sown by the founders of this society. I feel this society is doing well its difficult work by encouraging careful discrimination in the search for perfection of culture. If we implant in the minds of the young a love and reverence for the beautiful in the nature about us we will have inculcated the best teaching that it is possible to give.

The period which has elapsed since this society was founded has been marked by the introduction of more important improvements in every direction than any like period of the world's history. Mr. Hadwen closed by introducing Henry L. Parker as toastmaster.

Mr. Parker said the members of the society take great pride in the fact that they own this hall, and that they can gather in so many representatives of kindred societies and states. Last year has been an eventful one. When we gathered last there were mutterings of war. Since then war has been fought and we have been ceded a vast amount of territory. What will be done with this territory, whether we help to provide for those countries a good government, or whether we keep them as a part of the United States, is a question yet to be settled, though the latter course is a consummation not devoutly to be wished. However, there can be no doubt the results of the war will be of immense consequence to horticulture. Of the 16,000,000 acres in Cuba, only 2,000,000 are under cultivation, and yet there can be grown there almost all the crops of the earth and grown the year around. All that is necessary to do is to tickle the crop with a hoe.

There are three horticultural societies represented here, which are the oldest in the country,—the Massachusetts, the Worcester and the Rhode Island Societies. It gives me pleasure

to introduce J. E. C. Farnham, President of the Rhode Island Society.

Mr. Farnham said the poet has told us that one touch of nature makes the whole world kin, and he felt the force of that remark anew as he looked on the faces of the people before him, who had participated in the same good fare. Horticulture has come to be a very important industry in the great marts of trade. From New York to California there are poured into our section the fruits of all the country. Trades focalize and come together, and we work each for all and all for each. I have been impressed with the strength of this Society. I congratulate you on the possession of this magnificent property. From this section of the country has gone forth the brain and brawn and intelligence and energy which has made the country what it is. Back of the industries we come back to the maiden soil.

B. P. Ware, of Marblehead, Vice-President of the Massachusetts Horticultural Society, spoke for that organization. We in Boston could not get up such an occasion as this, for we lack the social elements. You may be surprised when I tell you I used not so many years ago to team into Boston with a two-horse load of cabbages, and there met a Worcester man with a one-horse load of huckleberries, and we swapped loads. We are noted in Marblehead for our cabbage heads. Marblehead cabbages teamed all the way to Worcester was a fact only a comparatively short time ago.

You send your products down to Boston and beat out our farmers and other places, and there are a few market gardeners in Worcester who bring down to Boston stuff which always win prizes.

Samuel T. Maynard, Professor of Horticulture in Massachusetts Agricultural College at Amherst, spoke for the Massachusetts Fruit Growers' Association, which he called a child of the Horticultural Society. Prof Maynard defended the institution against a charge that the Agricultural College was doing much the same work as the other educational institutions of the State. The college has graduated 500 men, of whom 40 per

cent. are engaged in some line of agriculture. This low percentage is due to a public sentiment, even among the agricultural communities, that farming is a "low down" occupation. We need more students, and with our splendid equipment can accommodate 200 more. Send us some of that 200 and we will return them to you as well fitted for the business of life as the graduates of any classical or other institution of learning.

Postmaster J. Evarts Greene was introduced as a trustee of the public reservations. He gave an account of that institution's aims and what it has accomplished in preserving historic memorials.

John Farquhar of Boston said there is no doubt horticulture is on the forward march and New England is in the front rank. Mr. Farquhar said he wished the Massachusetts Society had as good a home in a central location as the Worcester Society. The progress of horticulture in the United States is shown by the exportation of vegetables to England, whereas the tide was running the other way a few years ago.

Clarence F. Carroll, superintendent of the public schools, of Worcester, spoke of the influence of horticulture as an educational force and a remedy for this great artificiality which is coming more upon us in the future. The threatening element in this artificial life is the tendency away from nature and the spontaneous growth. The two forces that will offset the dangers of over-civilization are the existence of societies like this horticultural society, which we should all try to co-ordinate with the public schools, and the public schools which should save us from artificiality and barrenness of life.

At 9.15 o'clock the speaking closed, and the party adjourned to the main hall for dancing. The platform was beautifully decorated with Palms, Ferns and flowers from the conservatories of Hon. Stephen Salisbury. The banquet tables were profusely decorated with bouquets and vases of Narcissus, Snap-dragon, Carnations, Hyacinths, Callas, Ferns, Roses, and Lilies con-

tributed by H. F. A. Lange, Fred. A. Blake, C. D. Thayer, H. B. Watts, A. W. Hixon, and others.

Committee in charge of dancing: Arthur J. Marble, Floor Director; W. K. Stanley, C. D. Thayer, Will. T. Allen, Fred. H. Hammond, Arthur Hartshorn, Henry Rich, Edward Watts, Aids.

Among the Guests and Members were: President O. B. Hadwen, Hon. Henry L. Parker, George Cruickshanks, Hon. Henry A. Marsh, Hon. Nathaniel Paine, Col. Samuel E. Winslow, Benjamin P. Ware of Marblehead, Warren C. Jewett and wife, Prof. Samuel T. Maynard, Amherst; Postmaster J. Evarts Greene, John Farquhar and wife of Boston; J. E. C. Farnham and wife, Providence; C. W. Smith, Supt. C. F. Carroll, Miss Stella Carroll, Principal Homer P. Lewis, Secy. Adin A. Hixon, John S. Baldwin, John H. Hemingway, John C. MacInnes and wife, Hon. Ellery B. Crane and wife, George Calvin Rice, Senator Francis A. Harrington, William Hart, Col. James M. Drennan and wife, John B. Bowker and wife, Hon. J. Lewis Ellworth, Miss Marian Knight, Miss Gertrude M. Parker, Miss Gooding, A. W. Andrews and wife, H. L. Adams and wife, W. P. Thayer and wife, S. T. Pierce and wife, H. W. Thayer and wife, Miss Keyes, Miss Sheldon, Miss L. Coulson, Miss Lowell, C. T. Foster, Mrs. Frank E. Holt, Charles E. Bond and wife, Mrs. A. D. Flagg, Miss Ellen M. Flagg, J. L. Estey, Mrs. George Estey, F. W. Hixon and wife, Charles E. Neale and wife, J. F. Thayer, Anna C. Svedberg, L. M. Woodman and wife, A. H. Gould, W. D. Ross, Miss Eldridge, Ed. J. Watts, Miss Florence E. Watts, M. E. Atherton, Charles D. Thayer, Maj. F. G. Stiles and wife, Lieut. Samuel Hathaway, Calvin L. Hartshorn and wife, Arthur J. Marble and wife, W. K. Stanley and wife, Miss Gracie H. Stanley, Miss Leola Goffe, Miss Sarah Gates, Allyne W. Hixon, W. I. Allen and wife, Mary C. P. Landers, Miss L. M. Hildreth, Isaac Hildreth and wife, C. B. Winslow and wife, Mrs. Thomas Ward, H. B. Watts and wife, Varnum P. Curtis, Fred E. Warner and wife, Fred L. Chamberlain and wife, Miss Luella E.

Potter, Frank C. Parker, W. J. Wheeler and wife, C. A. Ballou, E. A. Weeks and wife, H. Woodward and wife, Miss Gerry, F. A. Blake and wife, Hon. E. I. Comins and wife, Charles B. Eaton and wife, Oliver S. Morey and wife, Miss Grace A. Chamberlain, J. A. Smith, Miss Rena Ball, Ellis Brown, Miss Amy Perkins, Edward Jones, E. C. Henchman and wife, E. J. Allen, Henry Putnam, A. R. King, Charles H. Marble, Henry Marble, Norman B. Parsons, Miss Anna G. Parsons, Miss Sarah F. Bennett, Miss C. E. Bennett, Mrs. A. W. Darling, Clarence E. Johnson, Miss Bertha J. Whitton, Miss Amy Williams, Henry W. Moore, James L. Marshall, J. Neilson, F. B. Madaus, H. R. King and wife, George M. Coe, Herbert R. Kinney and wife, Mrs. C. B. Johnson, Chester F. Cutting and wife, Miss Marion Otis Midgley, F. H. Hammond and wife and Miss Hammond, Miss Myra L. Hammond, G. H. Foster, Mrs. Coulson, W. E. Sargent.

From out of town were: Ethelbert Bliss, Wilbraham; John G. Avery, Spencer; Augustus Pratt, Middleboro; E. A. Bartlett and wife, Shrewsbury; C. H. Green and wife, Spencer; E. M. Bruce and wife, Leominster; David L. Fiske and wife, Grafton; the Misses Fiske; A. G. Sharp, Arthur J. Hobbs, Pembroke, N. H.; J. Elton Green, Spencer; Abel F. Stevens and wife, Wellesley; Charles E. Parker and wife, Holden; S. D. Ward, Shrewsbury; W. U. Maynard, Shrewsbury; George McWilliams and wife, Whitinsville; H. A. Cook, Shrewsbury; E. W. Breed, Clinton.

9th March, A. D. 1899.

ESSAY

BY

ABEL F. STEVENS, Wellesley, Mass.

Theme:—New Methods in Horticulture.

Horticulture, the earliest employment of man, is also one of the most attractive. It is the poetry of agriculture! A taste for this delightful vocation is almost universal in this country. That garden in which Adam and Eve were placed was the primitive paradise; and to this day a tastefully arranged and judiciously planted garden, with fragrant flowers and delicious fruits, has still lingering about it many of the charms we are wont to attribute to the original Eden. And to every true lover of horticulture it seems, in the fulness of its summer beauty and autumnal fruitage, to be indeed almost a "Paradise Regained."

Among the most gratifying evidences of progress in horticulture, are the new methods in culture and the numerous acquisitions of new and valuable varieties of fruits, by which the season is greatly prolonged by the accessions of earlier and later varieties, by the better knowledge in the keeping and packing of fruits, and the facilities of transportation. Our markets and tables are now supplied with delicious fruits throughout the entire year, with such a variety as no other nation can produce! The progress of invention, the developments of science, and the spur of enterprise are indeed grand in other departments of industry, but in all this the fruit culture of our own dear State will have its full share. The great need of our horticulture today, in all of its departments, is "Brains"; for the practical progressive cultivator who is up-to-date *must* be a man of

broad liberal education. He needs to know in a specific way the chemical elements of the soil, of his fertilizers, and fruits; he, therefore, should understand chemistry. He should be familiar with the structure of plants, the science of plant life, botany. It is required of him to know the habits of those insects that prey on his trees, and how to destroy them. As well should he know those insects that are aiding him in his labors, therefore must have a knowledge of entomology. In fact there is no employment on earth which calls for more broadly cultivated minds than the profession of horticulture. And we fully believe that our agriculture will never take the high rank that it is entitled to, until men everywhere recognize it as the "most learned of all the professions. And as that vocation upon the success of which depends the whole fabric of human society."

Fruit growers are the benefactors of the race. Who can estimate the importance and value as a factor in our national wealth, of a new variety of fruit which shall be adapted to all soils and locations of our rapidly extending cultivation? He who shall originate such a fruit should be held in remembrance as a benefactor of mankind. What greater temporal comforts can we leave to our children and friends than the fruits of the orchard and garden? What more valuable testimonials of a philanthropic life than the trees we plant for fruit for the future generations to enjoy? The man who plants a fruit tree is a benefactor of his day and generation!

CHARACTERISTICS OF GOOD FRUIT.

As all fruits are raised to eat, we must give the first place of honor to its *eating qualities*. Next in importance, is *durability*, or its keeping properties. The third requisite is *size*, which should be of good uniform shape, neither monstrous nor small. As beauty in form, as well as in color, will always be of great value in market fruit, brilliant colors will always charm the eye, although they may not gratify the taste. So in our endeavors to perfect new varieties of delicious fruits we must regard as the chief requisites: first, quality; second, value for general

cultivation; third, uniformity of shape; fourth, beauty of color. All of these special points of a good variety of fruit should be the standard of every grower.

All these, combined with vigor of growth, hardiness, and productiveness in the trees or vines, will be an invaluable acquisition to our list of standard fruits. As a rule, a variety succeeds best in the locality of its origin. There are two methods of producing new kinds; viz. by seeds and by hybridization. Let us sow the seeds of our best fruits. Also, with care, skill and judgment commingle the pollen of two of the best species and the production of a seedling from this union, and thus produce new and improved varieties.

HOW TO MARKET FRUIT.

There is always room at the *top* for the successful fruit grower, and there always will be.

There is no escape from over-production and ruinous competition, from every point, except through *higher* and *better production*. Raise fruit that readily catches the eye by its fine form and bright color, put it up in A No. 1 style, in neat, clean, new boxes or barrels, baskets or crates, all neatly stencilled with the grower's full name and fruit farm on each.

Always grade your fruit with care and courage, and never mix the grades in same package. Before putting in the fruit, place a piece of white paper, the same shape and size of inside of barrel head or box cover, with your advertisement as a fruit grower neatly printed upon it. Now face the first three layers stem downward and fill to the top with the *same* quality. In filling, shake often, round up the top and press firmly. Cover with another heading of printed paper. Secure firmly the head or cover. Now turn on the other end and stencil it with quality, variety, and address of grower. When the high quality of *your fruit* is *known*, it will *find* its *own buyer* and *command* its own *price!*

CULTIVATION OF THE SOIL.

To conserve moisture in the soil for the growth and development of the plants, for the disintegration of compact soil, to

enable the soil to absorb the rainfall more quickly, and maintain it nearer the roots of the growing plants, also to admit fresh air, and enable them to penetrate the soil, *these* are the primary reasons for cultivation. And the principal objects for subsequent tillage, whether by plow, harrow, or hoe, are to prevent loss of water by the growth of weeds, &c. Also to keep the surface covered with loose, dry mulch, in order to prevent loss of moisture by evaporation. The principles of good plowing seem to be almost one of the "lost arts," for as we see, in so many sections, the same old custom of plowing for successive years the same field at exactly the same depth. Thus forming a compact subsoil below the plow rendering it impervious to water, the injurious effects are twofold; viz., it makes it more difficult for the rainfall to be absorbed as rapidly as it falls, and increases the danger of loss of water and injury to the soil by surface washing and erosion of fields into gullies. These can be prevented by deeper cultivation and leaving the subsoil in a loose and absorbent condition.

SUBSOILING.

The *practical value* of which will be seen in the beneficial effect on the growing plants and increased crops, especially in the orchards and vineyards, as well as in the berry fields. The true principles of subsoiling. We would lay down for guidance these rules, viz.: it is rarely *necessary* in light, porous, sandy soils; it is not *beneficial* in heavy, wet soils *unless* they are previously and *thoroughly* underdrained; and it is likely to be *injurious* if much of the subsoil is brought to the top and incorporated into the surface soil, as it is generally sour, unhealthy and contains poisonous matter, which would be deleterious to plant growth.

The highest art of cultivation which has ever been practiced is that of trenching, so extensively employed in Europe and so earnestly advocated by all great agricultural writers. No known implement is so effective for loosing and improving the soil as the spade, as it does not *cut* the soil *from* the subsoil as the plow, but breaks it off and there is no compacting of the

soil *below* that point. Notice the difference of *tilth* of a *spaded* garden and of a *plowed* field. The ideal system of cultivation for our fruit-producing trees and plants can be made only by suitable implements specially adapted to the required work. We have found the best ones in the Steel Swivel Plow; the Pick-tongued Subsoil Plow; the Spading, Cutaway, and Acme Harrows; the Plank Drag; and Harrow-toothed Cultivator.

FERTILITY.

In maintaining proper fertility we attach great importance to the preservation of humus in the soil, as it performs different functions, which are of the greatest importance in crop production. For it influences the temperature, tilth, permeability, absorption, weight and color of soils, and controls to a high degree their supply of water, nitrogen, phosphoric acid, and potash. Humus is added to the soil by application of organic matter in the form of stable manures, decayed animal and vegetable matter. The marked difference between old wornout soils and that of new virgin soils—of the same character—is in the amount of humus which is present. In the decline of fertility the *loss* of humus is chiefly the cause, more than that of the removal of the essential fertilizing elements.

NITROGEN IN HUMUS.

The two most important points regarding the composition of humus are, the presence of nitrogen as a constituent, and the chemical union of the humus with potash, lime, phosphoric acid, forming humates. Good humus generally contains from 3 to 14 % nitrogen. It is also a means of supplying indirectly compounds which are essential as plant food, and combined with potash, lime and phosphoric acid this mineral matter so chemically combined is of fertilizing value. It is well known that stable manures are among the most lasting in its effect of any of the fertilizers which can be applied. This is due to the power which the manure possesses of uniting with the soil potash, phosphoric acid and lime, &c., to produce humates—which is also useful in making the inert plant food of the soil more available;

for it is estimated that an ordinary apple crop removes from an acre of soil about 50 lbs. nitrogen, 40 lbs. phosphoric acid and 75 lbs. potash. This amount, yea more, must be *returned* to the soil *annually* to supply the trees with food to produce full crops of fair smooth fruit.

ORCHARD FERTILITY.

For apples and pears give a liberal dressing, 10 cords per acre, of good strong stable manure in November, evenly on surface extending far beyond the outer branches, and alternate the next November with one ton wood ashes or 300 lbs. muriate of potash, and 500 lbs. fresh ground bone. The great advantage of early fall manuring of our orchards is found in the strong and vigorous bud and spur development in bearing trees and in all that rich, luxuriant growth of foliage in the following spring and summer, for the reason that the rains soon dissolve the mineral salts and carry them down in the soil, where the millions of rootlets *feed* the trees and plants. For the peach, plum and cherry trees use a compost of swamp muck, one year old, that has had a liberal mixture of fresh lime and salt well incorporated. Now, at the time of applying, to the above add 300 lbs. potash and 500 lbs. fresh ground bone. Notice we apply to all stone fruits nearly double the amount of phosphoric acid to perfect the pits; a very essential point in producing high class fruit for market or storing for future sale.

ORCHARD CULTURE.

In all young orchards of apples and pears, and in *all* orchards of peach, plum and cherry trees, always keep the entire surface clean from all grass and cereal crops. Do *not* plow deep, but use the Wheel-Cutaway and Acme Drag Harrow. Start cultivation as early in Spring as possible, have all the soil in good tilth, and by April 20th sow 12 lbs. clover seed mixed as follows: 4 lbs. red, 4 lbs. Alsike, and 4 lbs. American grown crimson. Cover with smoothing harrow and roll down smooth. Now, if you do not have sheep or hogs to turn into and feed down this clover crop in July and August, then plow under

when in full blossom and roll down firmly to conserve moisture. Do not cultivate after Aug. 1st, so the young growth will ripen up in early fall Now in our old apple orchards when the trees have attained their full size, we seed down to clover and blue grass, and pasture sheep or pigs up to harvesting of crop, then apply the annual dressing as above. If we stock heavily with sheep or pigs and feed them with heavy grain rations this stock will supply nearly sufficient fertility for the trees.

PRUNING.

We call your attention to a few of the principles in plant physiology, upon which the practice of pruning depends. In the general structure of trees and woody plants, practically there are four general groups of tissues in the trunks and branches, viz. :

1. *Bark;* forming the outer coverings.
2. *Cambium;* is the thin slimy layer or sapwood between bark and sound wood.
3. *Wood;* that forms the greater portions of the stem, trunk or branches.
4. *Heart or Pith;* which makes up the center of the trees.

The experienced grower has learned by observation to adapt his system of pruning to the above fundamental principles of plant growth. Of the above tissues, the cambium is the most important, as this is the vehicle of carrying the life sap from root to branch ; it is also the method of adding growth to the tree or plant ; it is the most delicate substance of the tree fibre, for it is almost cellular tissue. Pruning is the most valuable method of directing and controlling the energies of trees and plants. In all pruning the fact should be ever kept in mind that the leaves make nearly all the food used by the living cells of a tree, for if the foliage is removed the cells must undergo a process of starvation until new leaves are formed. In the natural shedding of leaves or twigs, which is nature's pruning, a layer of corklike cells is formed, so when the leaves fall the process of healing is very soon completed, but in the death and decay of branches they must be removed at once before rot

producing fungii and bacteria develops and decay spreads into the sound wood, and will produce a cavity into which water and decay will soon destroy the tree. Let all such branches be cut off close down to the shoulder or enlargement at their base, so that the living cambium and bark will heal at once and soon cover over the WOUNDS. If the branch to be removed is large have the wound painted over as soon as *dry* with warm coal tar, and the internal rotting will be prevented. If in removing a large dead or decayed limb that leaves a large cavity in the trunk of the tree, cut close and smooth, then cover the cavity with a sheet of zinc neatly fitting the wound, secured with strong tacks, and paint over with coal tar. This practical method will preserve for many years a valuable tree. This system of pruning equally applies to park, street and ornamental as well as to orchard trees.

A fruit tree should be in the hands of an expert grower—a machine for manufacturing fruit. Pruning is one of the most important means by which this is accomplished.

PRUNING TO SHAPE THE TREE

and keep in shape is important so far as it relates to the ease in cultivation, gathering the fruit, and spraying; also in relation to winds, the weight of fruit, the protection of the trunk and branches from sunscald, &c.; also the pruning to distribute growth, removing cross-branches and checking terminal branches to induce the development of laterals. This will keep the tree vigorous and well supplied with thrifty fruit-producing branches. The balance between vegetative and reproductive growth, or between wood and fruit, must be maintained.

Always remember to cover all wounds at once after pruning with shellac varnish, liquid grafting wax or warm coal tar. If these wounds are small and on sound young trees, the shellac and wax is best, but if large and decayed use the tar covering. As pruning is a surgical operation it should be done with care and judgment and at proper seasons, as the true theory is based on the conditions of the sap. As this is the life-blood of the tree, never prune when the sap will run or

moisten the saw. We have seen many a fine orchard ruined, yea destroyed, by being severely pruned in March, April and May. Now the right time to prune depends on the object in view. For vigor and growth, prune during the dormant period of fall—October and November—but never when the wood is frozen, as the cellular tissues are ruptured and incipient decay begins. Now for stimulating fruit buds prune the rampant summer growth of terminal branches, which checks the vigorous flow of sap and diverts this energy into fruit production. In a word, prune in *Fall* for wood, in *Summer* for fruit.

THINNING FRUIT.

By a new method of pruning we do much of our thinning out of inferior fruit. This can be done in January instead of July. All commercial orchardists acknowledge the fact that to produce first-class marketable fruit that the crowded specimens must be thinned. Now during the busy season of mid-summer when the fruit is one-half grown, the average fruit-growing farmer has too much other work on hand, just at this important time in the rapidly developing fruit, to take the necessary time and care to properly thin out the surplus fruit. And I am sorry to admit that too many of them belong to that class who often are heard to say "I kinder reckon that enuff of them apples will fall without us helpen 'em before they git ripe." Now every progressive grower *will take* time to properly thin out, so as to produce the very best in size, color and flavor that is possible for the tree; about six inches apart, will give the best crop for profit. Now my new method of winter pruning is a successful and expeditious means of accomplishing this indispensable work by pruning or thinning out all the weaker spurs of fruit buds that are set too thickly on the branches.

MY METHOD

is as follows: during the mild warm days in December and January, we firmly secure to a long pole for a handle a small and sharp-pointed key-hole saw. Also, for inside tree pruning have another saw in a shorter handle. Also, fasten a thin and

very sharp two-inch chisel in similar pole for handle. Now with these practical tools and a Waters' "tree pruner" we can rapidly go over a large apple-tree, thinning out all the weak and those too close to each other, the fruit spurs. Now with care and good judgment in using the above tools and rapidly removing the surplus spurs, we find very little summer thinning of the apple and pear necessary. While the remaining fruit spurs receive so much more nourishment that they are decidedly stronger and produce larger, fairer, and higher colored fruit. Brother Fruit Growers, our new method is practicable. The necessary tools recommended are easily obtained, are very effectual in practice, and the results very gratifying. May success attend your efforts along these lines.

PACKAGES FOR FRUIT

should be of a uniform size and shape. The "Massachusetts Fruit Growers' Association" should demand the enactment of a State law defining the "Legal Standard Apple Barrel and Small Fruit Package." For all will concede that the amount of a product delivered should be the same as has been sold. No one will defend giving short weight or measure. Yet in our leading markets we find apple barrels differing more than a peck in their capacity, and the so-called quart packages which require forty to hold a bushel. Such conditions demoralize business, and react upon the whole community of fruit growers, as it does on the individuals. The "American Apple Shippers' Association" have recommended as a standard apple barrel the following, viz.: "Length of stave 28½ inches, diameter of head 17⅛ inches, and bilge 64 inches outside measurement." We find even greater dissatisfaction in the use of small fruit packages, for so much difference in sizes exist that it has already seriously injured the business of the grower, makes trouble for the dealer, and gives great dissatisfaction to the consumer. A legal standard should also be adopted for peach baskets and grape crates. Let a special committee of this Society be appointed to report at our next meeting, "An Act to Define the Size of all Fruit Packages."

In coming years may the hillsides and valley of the old Bay State be adorned with young, vigorous, fruitful orchards and fields, and we again have all the standard fruits in the same abundance as in their pristine days. Let us go on planting seeds and raising new varieties to replace the excellent kinds that are so fast disappearing, having filled their mission like the noble men that planted them! When I reflect upon the progress of horticulture and its benign influence on the health and happiness of mankind, I am most grateful to those noble men who did so much to help the cause in its earliest days. And by their laborious sowings we are now reaping such rich rewards and enjoying the fruits of their toil, which contributes so much to our happiness and welfare today! Let us in our day and generation contribute something to the shrine of "Pomona" that will be beneficial to those who may come after us! For as we have enjoyed what others have planted, let us now plant for others to enjoy.

OFFICERS AND COMMITTEES

OF THE

WORCESTER COUNTY HORTICULTURAL SOCIETY,

FOR THE YEAR 1898-99.

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VICE-PRESIDENTS:

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O. B. Hadwen, George E. Francis, Albert H. Lange, Arthur J. Marble, George McWilliams, Herbert R. Kinney, Charles Greenwood.

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Frederick A. Blake,	Henry L. Parker,	Herbert R. Kinney,
Edward Hall,	James Draper,	Henry Rich,
Albert H. Lange.	Arthur J. Marble,	George E. Francis, M.D.,
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AUDITORS.

Henry L. Parker, Frederic H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.: George McWilliams, Whitinsville.
ON FRUITS, ETC.: Henry Rich.
VEGETABLES: Charles Greenwood.
NATIVE MUSHROOMS: George E. Francis, M. D.

COMMITTEE ON WINTER MEETINGS.

Henry L. Parker, John B. Bowker, Henry B. Watts,

President Hadwen, and *Secretary* Hixon.

SCHEDULE OF PREMIUMS

OFFERED BY THE

WORCESTER COUNTY

HORTICULTURAL SOCIETY,

FOR THE YEAR

1899.

The attention of Exhibitors is particularly called to the Rules and Regulations, General and Special.

Worcester, Mass.
PRESS OF CHARLES HAMILTON,
311 MAIN STREET.
1899.

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ON

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CHARLES GREENWOOD, *Chairman.*

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WILLIAM J. WOOD.

CALVIN L. HARTSHORN,
SIMON E. FISHER,
HERBERT R. KINNEY,
GEORGE MCWILLIAMS,
MRS. G. MCWILLIAMS,
HENRY RICH,
GEORGE E. FRANCIS, M.D.

President, O. B. HADWEN.
Secretary, ADIN A. HIXON.
Horticultural Hall, No. 18 Front Street.

JUDGES OF AWARD.

FLOWERS, PLANTS, ETC.—George McWilliams, Whitinsville.
FRUITS, ETC.—Henry Rich.
VEGETABLES, ETC.—Charles Greenwood.
NATIVE MUSHROOMS.—George E. Francis, M.D.

COMMITTEE ON NOMENCLATURE.

O. B. Hadwen,
Albert H. Lange,
George E. Francis, M.D.,
George McWilliams,
Charles Greenwood,
Herbert R. Kinney,
Arthur J. Marble.

GENERAL RULES FOR ALL EXHIBITIONS.

A. Strict conformity to the Regulations and Rules will be expected and required, as well for the benefit of Exhibitors as for the convenience of the Officers of the Society.

B. Correct and legible names must be attached to each and every Flower or Plant entered in a class of named varieties.

C. All articles offered for premium must remain within the Hall throughout the hours of Exhibition, unless special permission for their removal shall be granted by the Committee on Exhibitions, etc.

D. All *Small Fruits* must be entered in boxes or baskets (except in the case of Strawberries or Currants, which are to be shown "*flat*") ; but they may be displayed subsequently in plates or dishes, at the taste of the exhibitor.

E. No person shall take more than one premium, under the same number.

F. The Judges may correct, before the close of any Exhibition, awards made by them, if satisfied that such were erroneous.

G. The cards of competitors shall be put, reversed, beneath the plates; and the Judges of Award shall be excluded from the Hall of Exhibition until the Exhibition itself is ready for judgment.

H. Competitors are expected to conform strictly to the conditions under which articles are invited. Evasion or violation of them may be reported to the TRUSTEES for future disqualification of the offender.

RULES AND REGULATIONS.

1. Exhibitions will be held on Thursday, March 16, April 20, and May 11. Commencing June 8 there will be Exhibitions every Thursday, until and including September 28 and October 12, A. D. 1899. The hours of Exhibition will be between 3 and 4.30 o'clock. Articles offered for premiums must be in the Hall by 2.15 o'clock P. M. of the days of Exhibition. Between 2.15 and 3 o'clock the Hall will be in exclusive charge of the Secretary and the Janitor, who will allow no one else to be present. The Judges of Award may be admitted under the limitations of GENERAL RULE G.

2. Competition for premiums is open to all; but a discount of one-third of the amount will be made from awards to persons who are not members of the Society; and it is strictly required that all specimens offered for premium shall have been grown by the competitors, on their own premises, *within the County of Worcester*, for a period of at least two (2) months previous to the date of exhibition.

3. After the articles are arranged they will be under the exclusive charge of the Judges, and *not even the owners* will have liberty to *remove* them until the exhibition is closed; when they will be delivered as the contributors may direct.

4. No cards of a business nature will be allowed in any exhibition.

5. Where a certain number or quantity of Plants, Flowers, Fruits or Vegetables is designated in the schedule, there must be neither more nor less than that number or quantity of specimens shown; and in no case can any other varieties than those named in the schedule be substituted.

6. It will be the duty of the Judges to *exclude from competition all inferior specimens.* Also, all such *Designs* as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

7. The Committee on Arrangements have power to change the time of exhibition for any article, if an earlier or later season renders such change necessary; and the Secretary is requested to give notice of one week, in some daily paper, and also at the preceding exhibition, when a change in the Schedule is proposed.

8. All articles offered for premium must be correctly named. Indefinite appellations such as "Pippin," "Sweeting," "Greening," etc., will not be considered as names. Any person exhibiting the same variety of Fruit or Vegetable, under different names, or exhibiting as grown by himself, Flowers, Fruit or Vegetables grown by another, thereby violating the objects and rules of the Society, shall be debarred from competing for the Society's premiums until reinstated.

9. No Flowers, Plants, Fruits or Vegetables will be entitled to a premium or gratuity unless they possess points of superiority; and the Judges are *strictly required* to withhold awards if, in their opinion, the articles exhibited do not merit them; nor shall any specimen for which a premium has been once awarded, receive another during the season.

10. Competitors will be required to furnish information as to their mode of cultivation, and to present specimens, for trial and examination, if requested.

11. In all exhibitions of Cut Flowers, for competition, the use of foliage must be restricted to that of the varieties shown; and not more than five blooms, clusters, sprays or spikes, all of which shall be of one color, and of one variety, shall be allowed in the same bottle, or vase, except when otherwise specified in the schedule. The Judge may correct any error that he thinks was without deliberate purpose.

12. No Judge shall award a premium or gratuity in any case wherein he is a competitor, or has an actual or resultant interest; in any such case the judgment shall be rendered by any three of the Committee on Arrangements and Exhibitions whom the Judge shall invite.

13. No Judge shall require anything of competitors respecting their exhibits, which is not distinctly specified in the schedule. No Flowers, Fruits, etc., etc., shall be put on the tables, for competition for premiums, by any person who is a judge as to the awards to be made for Fruits, Flowers, etc., etc.

14. The standard number required for an exhibit, whether of Fruits or Vegetables, will be twelve (12); unless otherwise specifically declared. The usual limit of measure, save for SMALL FRUITS, will be a half-peck.

15. All premiums that are not claimed within three months after the close of the official year shall be forfeited to the Society.

16. The awards will be made known as soon as the cards can be filled out and placed upon the tables.

17. "Downing's Fruits of America," revised edition, will guide the Judge of Fruits in his decisions upon matters at issue.

☞The Judges are authorized by the Trustees to invite the assistance of competent and discreet persons in the discharge of their duties.

FLOWERS, PLANTS, FRUITS, & VEGETABLES.

A. D. 1899.

☞The Committee on Arrangements and Exhibitions would direct the earnest attention of the Judges to *Rule 6!*

6. It will be the duty of the Judges to exclude from competition all inferior specimens. Also, all such designs, as, in their opinion, evince an incorrect taste. The Judge of Fruits, in making awards, will especially regard uniformity in size, symmetry of form, and beauty in color.

SPECIAL RULES.

1. Exhibitors will add value to their exhibits by having all specimens correctly and legibly named, and the number of varieties written on the entry cards. Notice of which will be taken by the Judge in awarding the premiums.
2. The Judge shall not award gratuities for flowers that are covered by the call of that day.
3. While it is expected that Exhibitors will take pains to correctly name their exhibits, the Judge will not exclude an exhibit for mistake in nomenclature.
4. In all exhibitions of Lilies the pollen may be removed.

By vote of the Trustees, all entries must be made to the Secretary, and all cards made out by him or his assistant.

Thursday, March 16.

☞*The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

HYACINTH,—in bloom.—					
No. 1.	Six plants, four premiums	$3 00	2 00	1 00	50
PRIMULA SINENSIS,—in bloom.—					
No. 2.	Four plants, four premiums	3 00	2 00	1 00	50
PRIMULA,—any other variety, in bloom.—					
No. 3.	Four plants, four premiums	2 00	1 50	1 00	50
CINERARIA,—in bloom.—					
No. 4.	Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
CYCLAMEN,—in bloom.—					
No. 5.	Four plants, distinct in color, four premiums	3 00	2 00	1 00	50
No. 6.	One plant, three premiums		1 50	1 00	50

CARNATION.—

No. 7. Cut blooms with foliage. Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50
ARUM (RICHARDIA),—IN BLOOM.—				
No. 8. Best collection; grown in an 8-inch pot; three premiums		2 00	1 00	50
AZALEA INDICA.—IN BLOOM.—				
No. 9. One plant, three premiums		3 00	2 00	1 00
No. 10. Three plants, four premiums	5 00	3 00	2 00	1 00
CUT FLOWERS.—				
No. 11. Not to exceed twenty blooms (clusters, sprays or spikes in vases), four premiums	3 00	2 00	1 00	50

APPLE.—				
No. 12. Baldwin, three premiums	$1 50	1 00	50	
No. 13. Northern Spy, three premiums	1 50	1 00	50	
No. 14. Any other variety, named, three premiums	1 50	1 00	50	
PEAR.—				
No. 15. Any variety, named, three premiums	1 50	1 00	50	

CABBAGE.—			
No. 16. Drumhead, 3 specimens, three premiums	$1 50	1 00	50
No. 17. Red, three premiums	1 50	1 00	50
No. 18. Savoy, three premiums	1 50	1 00	50
CELERY.—			
No. 19. Six specimens, three premiums	1 50	1 00	50
SQUASH.—			
No. 20. Hubbard, 3 specimens, three premiums	1 50	1 00	50
No. 21. Any other variety, 3 specimens, three premiums	1 50	1 00	50
MUSHROOMS.—			
No. 22. Twelve specimens, three premiums	1 50	1 00	50
TURNIP.—			
No. 23. Swede, Yellow, 6 specimens, three premiums	1 50	1 00	50
No. 24. Swede, White, 6 specimens, three premiums	1 50	1 00	50
No. 25. White Egg, 12 specimens, three premiums.	1 50	1 00	50

BEET.—

No. 26. Turnip, three premiums 1 50 1 00 50

CARROT.—

No. 27. Intermediate, three premiums..... 1 50 1 00 50

LETTUCE.—

No. 28. Six heads, four premiums.....2 00 1 50 1 00 50

Thursday, April 20.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS,—not to exceed 20 vases.—

No. 29. Not to exceed five blooms, clusters, sprays or spikes in each, four premiums..... ....$3 00 2 00 1 00 50

No. 30. Basket,—No restrictions, four premiums 3 00 2 00 1 00 50

ZONALE GERANIUM,—in bloom.—

No. 31. Four plants, distinct in color, four premiums 3 00 2 00 1 00 50

HYACINTH,—in bloom.—

No. 32. Twelve plants, not less than 6 varieties, four premiums..... 3 00 2 00 1 00 50

NARCISSUS,—not to exceed 24 vases.—

No. 33. Four premiums..... 3 00 2 00 1 00 50

TULIP.—

No. 34. Four pots or pans, not to exceed 12 bulbs in each, not less than three varieties, four premiums... 3 00 2 00 1 00 50

APPLE.—

No. 35. Roxbury Russet, three premiums.....$1 50 1 00 50

No. 36. Any other variety, named, three premiums. 1 50 1 00 50

PEAR.—

No. 37. Any variety, named, three premiums..... 1 50 1 00 50

HORSE RADISH.—

No. 38. Twelve specimens, three premiums.....$1 50 1 00 50

PARSNEP.—

No. 39. Hollow Crown, three premiums 1 50 1 00 50

No. 40. Other varieties, three premiums 1 50 1 00 50

RADISH.—

No. 41. Long, two bunches (6 in each bunch), three premiums 1 50 1 00 50

No. 42. Globe, two bunches (6 in each bunch), three premiums 1 50 1 00 50

SALSIFY.—

No. 43. Three premiums 1 50 1 00 50

LETTUCE.—

No. 44. Six heads, four premiums 2 00 1 50 1 00 50

RHUBARB.—

No. 45. Any variety, three premiums 1 50 1 00 50

DANDELION (cultivated).—

No. 46. One-half peck, three premiums 1 50 1 00 50

SPINACH.—

No. 47. One-half peck, three premiums 1 50 1 00 50

Thursday, May 11.

☞ *The* Committee on Arrangements and Exhibitions *will meet at* $3\frac{1}{2}$ *o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 48. Not to exceed 20 vases, four premiums $3 00 2 00 1 00 50

No. 49. Basket,—No restrictions, four premiums 3 00 2 00 1 00 50

PANSY,—without foliage.—

No. 50. Not to exceed 30 vases, one stem in a vase, four premiums 3 00 2 00 1 00 50

HYACINTH,—open culture.—

No. 51. Not to exceed 24 vases, one spike in each, four premiums 3 00 2 00 1 00 50

PELARGONIUM—(Fancy and Show)—in bloom.—

No. 52. Four plants, of distinct varieties, three premiums 3 00 2 00 1 00

*

TULIP.—OPEN CULTURE.—

No. 53. Display not to exceed 24 vases, four premiums 3 00 2 00 1 00 50

AZALEA—(MOLLIS).—

No. 54. For the best display in vases, four premiums 3 00 2 00 1 00 50

ASPARAGUS.—

No. 55. Two bunches, twelve specimens each, three premiums $1 50 1 00 50

DANDELION.—

No. 56. Cultivated, half-peck, three premiums ... 1 50 1 00 50

ONION.—

No. 57. Two bunches, six in each bunch, three premiums 1 50 1 00 50

RADISH.—

No. 58. Long, two bunches, six in each bunch, three premiums 1 50 1 00 50

No. 59. Globe, two bunches, six in each bunch, three premiums 1 50 1 00 50

RHUBARB,—12 STALKS.—

No. 60. Linnæus, three premiums 1 50 1 00 50

No. 61. Victoria, three premiums 1 50 1 00 50

SPINACH.—

No 62. Half-peck, three premiums 1 50 1 00 50

Thursday, June 8.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P.M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—

No. 63. Not to exceed 20 vases, four premiums $3 00 2 00 1 00 50

No. 64. ONE VASE.—The specimens not to be tied or wired, four premiums . 3 00 2 00 1 00 50

NATIVE FLOWERS.—

No. 65. In vases, no duplicates, six premiums 3 00 2 50 2 00 1 50 1 00 50

BEGONIA,—IN BLOOM.—

No. 66.	One plant, four premiums	2 00	1 50	1 00	50

IRIS.—

No. 67.	Not to exceed 10 vases, four premiums	3 00	2 00	1 00	50

RHODODENDRON.—

No. 68.	Display, in vases, four premiums	3 00	2 00	1 00	50

AZALEA,—GHENT.—

No. 69.	Display in vases, four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 70.	From hardy plants and shrubs, display not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

PÆONY.—

No. 71.	Not to exceed 24 vases, five premiums	4 00	3 00	2 00	1 00	50

STRAWBERRY.—

No. 72.	Any variety, 24 berries, flat, four premiums	$2 00	1 50	1 00	50

ASPARAGUS.—

No. 73.	Two bunches, twelve specimens each, three premiums	$1 50	1 00	50	

BEET.—

No. 74.	Early, twelve specimens, three premiums	2 00	1 50	1 00	

CUCUMBER.—

No. 75.	Three specimens, three premiums	1 50	1 00	50	

SPINACH.—

No. 76.	Half-peck, three premiums	$1 50	1 00	50	

RHUBARB,—MONARCH.—

No. 77.	Three premiums	1 50	1 00	50	

Thursday, June 15.

CUT FLOWERS.—

No. 78.	One vase, the specimens not to be tied or wired, four premiums	$3 00	2 00	1 00	50

BASKET,—NO RESTRICTIONS.—

No. 79.	AMATEUR,—four premiums	3 00	2 00	1 00	50
No. 80.	FLORIST,—four premiums	3 00	2 00	1 00	50

HAND BOUQUET.—

No. 81. Not to exceed nine inches in diameter, four premiums 3 00 2 00 1 00 50

FUCHSIA.—

No. 82. Distinct varieties, four plants in bloom, four premiums 3 00 2 00 1 00 50

STRAWBERRY.—

No. 83. Beder Wood, 24 berries, flat, three premiums 1 50 1 00 50

No. 84. Haviland, four premiums 2 00 1 50 1 00 50

No. 85. Varieties, not scheduled, four premiums 2 00 1 50 1 00 50

BEET.—

No. 86. Twelve specimens, three premiums.....$1 50 1 00 50

PEA.—

No. 87. One-half peck, four premiums..... 2 00 1 50 1 00 50

LETTUCE.—

No. 88. Six heads, three premiums 1 50 1 00 50

Thursday, June 22.

☞This exhibition will be open to the public from 3 P. M. until 5.30 P. M.

ROSE.—

No. 89. Twelve blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums $4 00 3 00 2 00 1 00

No. 90. Six blooms or clusters of distinct named varieties of H. P. Roses, outdoor culture, four premiums.. 3 00 2 00 1 00 50

No. 91. Not to exceed 30 vases, of H. P. Roses, one bloom or cluster in each, five premiums 5 00 4 00 3 00 2 00 1 00

No. 92. Basket of Roses, four premiums... 3 00 2 00 1 00 50

No. 93. Vase, H. P. Roses, shades of one color, not to exceed 10 blooms, three premiums 3 00 2 00 1 00

PÆONIA.—

No. 94. Not to exceed 24 vases, one flower in each, five premiums	4 00	3 00	2 00	1 00	50

STRAWBERRY.—

No. 95. Bubach, 24 berries, three premiums	$1 50	1 00	50		
No. 96. Leader, three premiums	1 50	1 00	50		
No. 97. Marshall, four premiums	2 00	1 50	1 00	50	
No. 98. Miner, four premiums	2 00	1 50	1 00	50	
No. 99. Varieties, not scheduled, four premiums	2 00	1 50	1 00	50	

PEA.—

No. 100. Nott's Excelsior, one-half peck, three premiums	$1 50	1 00	50		
No. 101. Any other variety named, one-half peck, four premiums	2 00	1 50	1 00	50	

ONION.—

No. 102. Any variety, two bunches, six each, three premiums	1 50	1 00	50		

TURNIP.—

No. 103. Any variety, three premiums	1 50	1 00	50		

Thursday, June 29.

CUT FLOWERS.—

No. 104. Not to exceed 20 vases (no duplicates), five premiums	$3 00	2 00	1 50	1 00	50

HAND BOUQUET.—

No. 105. Not to exceed 9 inches in diameter, four premiums	3 00	2 00	1 00	50	

CAMPANULA MEDIA.—(Canterbury Bell).

No. 106. Not to exceed 24 vases, three premiums,	2 00	1 00	50		

IRIS,—Spanish.—

No. 107. Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50	

DIANTHUS BARBATUS.—(SWEET WILLIAM).

No. 108.	Not to exceed 24 vases, one truss in a vase, four premiums	3 00	2 00	1 00	50

FOXGLOVE.—

No. 109.	Not to exceed 24 vases, three premiums.	2 00	1 00	50	

H. P. ROSES.—

No. 110.	Not to exceed 24 vases, one bloom or cluster in each, four premiums	3 00	2 00	1 00	50

STRAWBERRY.—

No. 111.	M. A. C., three premiums	$1 50	1 00	50	
No. 112.	Varieties, not scheduled, three premiums.	1 50	1 00	50	
No. 112½.	Collection, not more than five varieties, five premiums	3 00	2 00	1 50	1 00	50

CHERRY.—

No. 113.	Varieties, not scheduled, three premiums.	1 50	1 00	50	

BEET,—OPEN CULTURE.—

No. 114.	Turnip rooted, 12 specimens, three premiums	1 50	1 00	50	

CARROT.—

No. 115.	Two bunches, six in each, three premiums	1 50	1 00	50	

PEA.—

No. 116.	McLean's Advancer, one-half peck, four premiums	2 00	1 50	1 00	50

Thursday, July 6.

☞ *The* COMMITTEE ON ARRANGEMENTS AND EXHIBITIONS *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 117.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50

ZONALE GERANIUM.—

No. 118.	Not to exceed 24 vases, one truss in a vase, four premiums	3 00	2 00	1 00	50

LILIUM CANDIDUM.—

No. 119.	Twelve spikes, four premiums	3 00	2 00	1 50	1 00

July Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums . . . $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D. The Secretary will furnish cards for exhibitors for writing the names of varieties, using white for edible, red for poisonous, and blue for doubtful.

GLOXINIA,—DISTINCT.—

No. 120.	Four plants in bloom, four premiums	3 00	2 00	1 00	50

RASPBERRY.—

No. 121.	Cuthbert, one quart, three premiums	$1 50	1 00	50	
No. 122.	Varieties, not scheduled, three premiums.	1 50	1 00	50	

BLACKCAP.—

No. 123.	Gregg, one quart, two premiums	1 00	50		
No. 124.	Early Ohio, two premiums	1 00	50		
No. 125.	Souhegan, two premiums	1 00	50		
No. 126.	Varieties, not scheduled, three premiums,	1 50	1 00	50	

CHERRY.—

No. 127.	Black Eagle, one quart, three premiums.	1 50	1 00	50	
No. 128.	Black Tartarian, three premiums	1 50	1 00	50	
No. 129.	Coe's Transparent, three premiums	1 50	1 00	50	
No. 130.	Gov. Wood, three premiums	1 50	1 00	50	
No. 131.	Varieties, not scheduled, three premiums	1 50	1 00	50	

STRAWBERRY.—

No. 132.	Any variety, 24 berries, flat, four premiums	2 00	1 50	1 00	50

PEA.—

No. 133.	Stratagem, three premiums	$2 00	1 50	1 00	
No. 134.	Varieties, not scheduled, three premiums	2 00	1 50	1 00	

CABBAGE.—

No. 135.	Any variety, 3 specimens, four premiums	2 00	1 50	1 00	50

POTATO.—

No. 136.	Any named variety, 12 specimens, four premiums	2 00	1 50	1 00	50

Thursday, July 13.

CUT FLOWERS.—

No. 137.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50
No. 138.	Basket, no restrictions, four premiums	3 00	2 00	1 00	50

PETUNIA,—WITHOUT FOLIAGE.—

No. 139.	Not to exceed 30 vases, one flower in each vase, four premiums ...	3 00	2 00	1 00	50

HYDRANGEA,—ONE PLANT IN BLOOM.—

No. 140.	Six premiums.....	3 00	2 50	2 00	1 50	1 00	50

CHERRY.—

No. 141.	Downer's Late Red, three premiums ...	1 50	1 00	50
No. 142.	Elton, three premiums	1 50	1 00	50

CURRANT.—

No. 143.	Fay, 24 bunches, four premiums.	2 00	1 50	1 00	50
No. 144.	Red Dutch, four premiums	2 00	1 50	1 00	50
No. 145.	White, four premiums	2 00	1 50	1 00	50
No. 146.	Varieties, not scheduled, four premiums	2 00	1 50	1 00	50

RASPBERRY.—

No. 147.	Golden Queen, one quart, three premiums.	1 50	1 00	50
No. 148.	Hornét, three premiums....	1 50	1 00	50
No. 149.	Varieties, not scheduled, three premiums,	1 50	1 00	50

BEAN,—SNAP—one-half peck.—

No. 150.	Wax, four premiums.....	2 00	1 50	1 00	50
No. 151.	Green pod, four premiums.	2 00	1 50	1 00	50

PEA.—

No. 152.	Champion of England, three premiums,	2 00	1 50	1 00
No. 153.	Telephone, three premiums	2 00	1 50	1 00

CABBAGE.—

No. 154.	Henderson, four premiums.....	2 00	1 50	1 00	50

SQUASH.—

No. 155.	Summer Crookneck, 3 specimens, three premiums..	1 50	1 00	50

TOMATO.—

No. 156.	Any named variety, three specimens..	2 00	1 50	1 00

Thursday, July 20.

PHLOX DRUMMONDII.—

No. 157.	Not to exceed 30 vases, four premiums .....:.....$	3 00	2 00	1 00	50

HOLLYHOCK.—

No. 158.	Not to exceed twenty vases, one bloom in each, four premiums..	3 00	2 00	1 00	50

SWEET PEA,—WITHOUT FOLIAGE.—

No. 159. Not to exceed 40 vases, not exceeding ten flower stems in a vase, six premiums 3 00 2 50 2 00 1 50 1 00 50

GOOSEBERRY.—

No. 160. One quart, any named variety, four premiums $2 00 1 50 1 00 50

PEAR.—

No. 161. D'Eté, three premiums $1 50 1 00 50

BEAN,—(SHELL).—

No. 162. Any (named) variety, four premiums $2 00 1 50 1 00 50

CORN.—

No. 163. (Sweet), four premiums 2 00 1 50 1 00 50

POTATO,—12 specimens.

No. 164. Hebron, three premiums 1 50 1 00 50

No. 165. Polaris, three premiums 1 50 1 00 50

No. 166. Rose, three premiums 1 50 1 00 50

No. 167. Varieties, not scheduled, three premiums. 1 50 1 00 50

Thursday, July 27.

CUT FLOWERS,—DISTINCT VARIETIES.—

No. 168. Twenty blooms, clusters, sprays, stems, or spikes, in vases, four premiums $3 00 2 00 1 00 50

BASKET,—NO RESTRICTIONS.—

No. 169. Amateur, four premiums 3 00 2 00 1 00 50

No. 170. Florist, four premiums 3 00 2 00 1 00 50

CLEMATIS.—

No. 171. Display, in vases, three premiums 3 00 2 00 1 00

NATIVE FLOWERS.—

No. 172. Display in vases, no duplicates, six premiums 3 00 2 50 2 00 1 50 1 00 50

APPLE.—

No. 173.	Yellow Transparent, three premiums	$1 50	1 00	50	
No. 174.	Tetofsky, three premiums	1 50	1 00	50	
No. 175.	Varieties, not scheduled, three premiums.	1 50	1 00	50	

PEAR.—

No. 176.	Varieties, not scheduled, three premiums.	1 50	1 00	50	

BLACKBERRY.—

No. 177.	Agawam, one quart, three premiums	$1 50	1 00	50	
No. 178.	Early Harvest, three premiums	1 50	1 00	50	

BEAN—(shell).—

No. 179.	Dwarf Horticultural, half peck, four premiums	2 00	1 50	1 00	50

CORN.—

No. 180.	Crosby, four premiums	2 00	1 50	1 00	50

CUCUMBER.—

No. 181.	Three specimens, three premiums	1 50	1 00	50	

TOMATO.—

No. 182.	Acme, three premiums	1 50	1 00	50	

Thursday, August 3.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

ANTIRRHINUM,—Snap Dragon.—

No. 183.	Twenty-four vases, not to exceed three branches in a vase, four premiums	$2 00	1 50	1 00	50

GERMAN STOCKS.—

No. 184.	Twenty-four vases, not to exceed three branches in a vase, four premiums	3 00	2 00	1 00	50

SWEET PEA,—without foliage.—

No. 185.	Not to exceed 40 vases, not exceeding 10 flower stems in a vase, six premiums	3 00	2 50	2 00	1 50	1 00	50

August Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums... $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D. The Secretary will furnish cards for exhibitors for writing the names of varieties, using white for edible, red for poisonous, and blue for doubtful.

CHINA PINK.—

No. 186.	Not to exceed 30 vases, no duplicates, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 187.	Astrachan, four premiums	$2 00	1 50	1 00	50
No. 188.	Sweet Bough, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 189.	Any variety, four premiums	2 00	1 50	1 00	50

BLACKBERRY.—

No. 190.	Snyder, one quart, three premiums	$1 50	1 00	50	
No. 191.	Wachusett, three premiums	1 50	1 00	50	
No. 192.	Varieties, not scheduled, three premiums	1 50	1 00	50	

CORN.—

No. 193.	Any variety, three premiums	$1 50	1 00	50	

SQUASH.—

No. 194.	Orange Marrow, three specimens, three premiums	1 50	1 00	50	
No. 195.	Summer Crookneck, three specimens, three premiums	1 50	1 00	50	

TOMATO.—

No. 196.	Livingston's Perfection, three premiums	1 50	1 00	50	

Thursday, August 10.

CUT FLOWERS.—

No. 197.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50

GLADIOLUS.—

No. 198.	Twenty vases, one spike in each, four premiums	3 00	2 00	1 00	50

SALPIGLOSSIS.—

No. 199.	Not to exceed 20 vases, four premiums	2 00	1 50	1 00	50

APPLE.—

No 200.	Oldenburg, four premiums	$2 00	1 50	1 00	50
No. 201.	Varieties, not scheduled, three premiums.	1 50	1 00	50	

PEAR.—

No. 202.	Giffard, four premiums	2 00	1 50	1 00	50

PEACH.—

No 203.	Alexander, three premiums	1 50	1 00	50	
No. 204.	Beatrice, three premiums	1 50	1 00	50	

BEAN,—SHELL.—

No. 205.	Pole, any variety, three premiums	$1 50	1 00	50	
No. 206.	Pole (string) three premiums	1 50	1 00	50	

SQUASH.—

No. 207.	Boston Marrow, three specimens, three premiums	1 50	1 00	50	

TOMATO.—

No. 208.	Beauty, three premiums	1 50	1 00	50	

Thursday, August 17.

ASTER.—

No. 209.	Comet, 20 vases, one bloom in each, three premiums	$2 00	1 00	50	
No. 210.	Victoria, 30 vases, one bloom in each, four premiums	3 00	2 00	1 00	50
No. 211.	Pompom, not to exceed 20 vases, one plant in each, four premiums.	3 00	2 00	1 00	50
No. 212.	Truffaut, — Pæony-Flowered, not to exceed 30 vases, one bloom in each vase, four premiums	3 00	2 00	1 00	50
No. 213.	Any other variety than the above, not to exceed 20 vases, one bloom in each, three premiums	2 00	1 00	50	

GLADIOLUS.—

No. 214.	Twenty vases, one spike in each, four premiums	3 00	2 00	1 00	50

PHLOX,—PERENNIAL.—

No. 215.	Twenty vases, one head in each, five premiums	3 00	2 00	1 50	1 00	50

APPLE.—

No. 216.	Somerset, four premiums	$2 00	1 50	1 00	50
No. 217.	Williams, four premiums	2 00	1 50	1 00	50
No. 218.	Golden Sweet, three premiums		1 50	1 00	50

PEAR.—

No. 219.	Clapp, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 220.	Any variety, four premiums	2 00	1 50	1 00	50

BEAN—(HALF-PECK IN POD).—

No. 221.	Goddard, three premiums	$1 50	1 00	50	

TURNIP.—

No. 222.	Purple top, three premiums	1 50	1 00	50	

CORN.—

No. 223.	(Sweet), Twelve ears, not less than 12 rows, three premiums	1 50	1 00	50	

Thursday, August 24.

SCABIOSA.—

No. 224.	Not to exceed 20 vases, not exceeding six flowers in a vase, four premiums	$3 00	2 00	1 00	50

ZINNIA.—

No. 225.	Not to exceed 24 vases, at least 12 varieties, one flower iu a vase, four premiums	3 00	2 00	1 00	50

LILIUM SPECIOSUM.—

No. 226.	Twelve vases, four premiums	3 00	2 00	1 00	50

BEGONIA—(TUBEROUS ROOTED).

No. 227.	Not to exceed 24 vases, five premiums	4 00	3 00	2 50	2 00	1 00

APPLE.—

No. 228.	Sour Bough, three premiums	$1 50	1 00	50	
No. 229.	Varieties, not scheduled, three premiums	1 50	1 00	50	

CRAB.

No. 230.	Transcendent, 24 specimens, three premiums	1 50	1 00	50	

PEAR.—

No. 231.	Assomption, three premiums	1 50	1 00	50	
No. 232.	Petite Marguerite, three premiums	1 50	1 00	50	
No. 233.	Rostiezer, three premiums	1 50	1 00	50	
No. 234.	Tyson, three premiums	1 50	1 00	50	

PEACH.—

No. 235.	Cooledge, three premiums	1 50	1 00	50	
No. 236.	Varieties, not scheduled, three premiums	1 50	1 00	50	

BEAN—(HALF-PECK IN POD),—

No. 237.	Horticultural (pole), three premiums	1 50	1 00	50	

LIMA—Large,

No. 238.	Half-peck, four premiums	2 00	1 50	1 00	50

CAULIFLOWER.—

No. 239.	Three specimens, three premiums	2 00	1 50	1 00	

TOMATO.—

No. 240.	Varieties, not scheduled, three premiums	1 50	1 00	50	

SQUASH.—

No. 241.	Any variety, three specimens, three premiums	1 50	1 00	50	

Thursday, August 31.

BOUQUET—(PARLOR).

No. 242.	AMATEUR,—four premiums	$3 00	2 00	1 00	50
No. 243.	FLORIST,—four premiums	3 00	2 00	1 00	50

DAHLIA.—

LARGE FLOWERED,—

No. 244.	Not to exceed 20 vases, one flower in each, five premiums	3 00	2 00	1 50	1 00	50

POMPON,

No. 245.	Not to exceed 20 vases, not to exceed three flowers in each, four premiums	3 00	2 00	1 00	50

NASTURTIUM OR TROPÆOLUM.—

No. 246.	Not to exceed 24 vases, not more than six blooms in each vase, four premiums	3 00	2 00	1 00	50

VERBENA.—

No. 247.	Not to exceed 24 vases, four premiums	3 00	2 00	1 00	50

ASTER,—SEMPLES.—

No. 248.	Vase of 20 blooms, four premiums	2 00	1 50	1 00	50

APPLE.—

No. 249.	Gravenstein, four premiums	$2 00	1 50	1 00	50
No. 250.	Worcester Spy, three premiums		1 50	1 00	50
No. 251.	Varieties, not scheduled, three premiums		1 50	1 00	50

PEAR.—

No. 252.	Ansault, three premiums		1 50	1 00	50
No. 253.	Earle's Bergamot, three premiums		1 50	1 00	50
No. 254.	St. Ghislain, three premiums		1 50	1 00	50

PEACH.—

No. 255.	Foster, four premiums	2 00	1 50	1 00	50

PLUM.—

No. 256.	Bradshaw, five premiums	3 00	2 00	1 50	1 00	50
No. 257.	McLaughlin, three premiums			1 50	1 00	50
No. 258.	Washington, three premiums			1 50	1 00	50
No. 259.	Gen. Hand, four premiums		2 00	1 50	1 00	50
No. 260.	Imperial Gage, four premiums		2 00	1 50	1 00	50
No. 261.	Victoria, four premiums		2 00	1 50	1 00	50
No. 262.	Jefferson, four premiums		2 00	1 50	1 00	50
No. 263.	Japanese, four premiums		2 00	1 50	1 00	50

CUCUMBER.—FOR PICKLES.—

No. 264.	Half-peck, three premiums	$1 50	1 00	50

CORN,—VARIETIES NOT SCHEDULED.—

No. 265.	(Sweet), 12 ears, of not less than 12 rows, three premiums	1 50	1 00	50

PEPPER.—

No. 266.	Large Bell, 12 specimens, three premiums	1 50	1 00	50
No. 267.	Squash, 12 specimens, three premiums	1 50	1 00	50

Thursday, September 7.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

CUT FLOWERS.—DISTINCT VARIETIES.—

No. 268.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50

GERANIUM.—

No. 269.	Not to exceed 24 vases, one truss in a vase, five premiums	3 00	2 00	1 50	1 00	50

GLADIOLUS.—

No. 270.	Not to exceed 20 vases, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 271.	Foundling, three premiums	$1 50	1 00	50	
No. 272.	Holden, three premiums	1 50	1 00	50	
No. 273.	Wealthy, three premiums	1 50	1 00	50	

PEAR.—

No. 274.	Lucrative, three premiums	1 50	1 00	50	
No. 275.	Varieties, not scheduled, three premiums	1 50	1 00	50	

PLUM.—

No. 276.	Fellenberg, three premiums	1 50	1 00	50	
No. 277.	Lombard, four premiums	2 00	1 50	1 00	50
No. 278.	Quackenboss, four premiums	2 00	1 50	1 00	50
No. 279.	Japanese, four premiums	2 00	1 50	1 00	50
No. 280.	Moore's Arctic, three premiums	1 50	1 00	50	
No. 281.	Varieties, not scheduled, three premiums	1 50	1 00	50	

PEACH.—

No. 282.	Crawford (Early), four premiums	2 00	1 50	1 00	50
No. 283.	Mountain Rose, four premiums	2 00	1 50	1 00	50

CABBAGE.—

No. 284.	Brunswick, three specimens, four premiums	$2 00	1 50	1 00	50

September Exhibition of Native Mushrooms.

As the growth and abundance of Fungi depend on the weather and the nature of the season the exact date cannot be fixed in advance, but notice will be given as early as possible.

Collection of named varieties, three premiums . . . $3 00 2 00 1 00

In making these awards the number and size of specimens will not have as much weight as accurate naming of species and their variety, and accurate description of the edible and hurtful qualities will be considered to increase their merit. The offering of these premiums is not to encourage the exhibiting of a great many kinds, concerning which little or nothing is known, but to educate exhibitors and the public in the nature of this very large part of our native vegetation, which has been so greatly neglected in the past. At other exhibitions of the Society gratuities may be given for choice single specimens or collections, named or unnamed.

The awards in this department will be made by George E. Francis, M.D. The Secretary will furnish cards for exhibitors for writing the names of varieties, using white for edible, red for poisonous, and blue for doubtful.

CELERY,—BLANCHED.—

No. 285.	Six specimens, any variety named, four premiums	2 00	1 50	1 00	50

Thursday, September 14.

CUT FLOWERS.—

No. 286.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50
	(BASKET.)—No restrictions.				
No. 287.	Amateur, four premiums	3 00	2 00	1 00	50
No. 288.	Florist, four premiums	3 00	2 00	1 00	50

ASTER.—

No. 289.	Not to exceed 24 vases, one plant in each, four premiums	3 00	2 00	1 00	50

MARIGOLD.—

No. 290.	Not to exceed 24 vases, not to exceed three flowers in a vase, four premiums	2 00	1 50	1 00	50

APPLE.—

No. 291.	Gravenstein, five premiums $3 00	2 00	1 50	1 00	50
No. 292.	Maiden's Blush, three premiums		1 50	1 00	50
No. 293.	Porter, three premiums		1 50	1 00	50
No. 294.	Washington Strawberry, four premiums	2 00	1 50	1 00	50

APPLE,—CRAB.—

No. 295.	Hyslop, 24 specimens, three premiums		1 50	1 00	50

PEAR.—

No. 296.	Bartlett, five premiums 3 00	2 00	1 50	1 00	50
No. 297.	Varieties, not scheduled, four premiums	2 00	1 50	1 00	50

PEACH.—

No. 298.	Old Mixon, four premiums	2 00	1 50	1 00	50
No. 299.	Crosby, four premiums	2 00	1 50	1 00	50
No. 300.	Seedlings, four premiums	2 00	1 50	1 00	50
No. 301.	Varieties, not scheduled, four premiums	2 00	1 50	1 00	50

PLUM.—

No. 302.	Coe's Golden Drop, three premiums		1 50	1 00	50
No. 303.	Pond's Seedling, three premiums		1 50	1 00	50
No. 304.	Reine Claude de Bavay, three premiums		1 50	1 00	50

GRAPE.—

No. 305.	Green Mountain, three clusters, three premiums		1 50	1 00	50
No. 306.	Moore, three premiums		1 50	1 00	50

MELON.—

No. 307.	Green Flesh, three specimens, four premiums	2 00	1 50	1 00	50
No. 308.	Yellow Flesh, four premiums	2 00	1 50	1 00	50
No. 309.	Water, three specimens, three premiums		1 50	1 00	50

CARROT.—

No. 310.	Any variety, three premiums		$1 50	1 00	50

EGG PLANT.—

No. 311.	Three specimens, three premiums		1 50	1 00	50

CABBAGE.—

No. 312.	Red, three specimens, three premiums		1 50	1 00	50
No. 313.	Savoy, three specimens		1 50	1 00	50

CAULIFLOWER.—

No. 314.	Three specimens, four premiums	2 00	1 50	1 00	50

Thursday, September 21.

CUT FLOWERS.—

No. 315.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50
No. 316.	Basket, four premiums	3 00	2 00	1 00	50

APPLE.—

No. 317.	American Beauty, three premiums		$1 50	1 00	50
No. 318.	Lyscom, three premiums		1 50	1 00	50
No. 319.	McLellan, three premiums		1 50	1 00	50
No. 320.	Mother, three premiums		1 50	1 00	50
No. 321.	Twenty-Ounce, three premiums		1 50	1 00	50
No. 322.	Holland Pippin, three premiums		1 50	1 00	50

PEAR.—

No. 323.	Louise Bonne de Jersey, four premiums	2 00	1 50	1 00	50
No. 324.	Superfin, three premiums		1 50	1 00	50
No. 325.	Urbaniste, three premiums		1 50	1 00	50
No. 326.	Washington, three premiums		1 50	1 00	50

PEACH.—

No. 327.	Crawford (late), four premiums	2 00	1 50	1 00	50
No. 328.	Stump the World, four premiums	2 00	1 50	1 00	50

GRAPE.—

No. 329.	Brighton, three clusters, three premiums		1 50	1 00	50
No. 330.	Lindley, three premiums		1 50	1 00	50
No. 331.	Massasoit, three premiums		1 50	1 00	50
No. 332.	Worden, four premiums	2 00	1 50	1 00	50

VEGETABLE.—

No. 333.	Collection, not exceeding 25 varieties, four premiums	$8 00	6 00	4 00	2 00

Thursday, September 28.

CUT FLOWERS.—

No. 334.	Not to exceed 20 vases, four premiums	$3 00	2 00	1 00	50
No. 335.	Native Flowers in vases, no duplicates, six premiums	3 00	2 50	2 00	1 50	1 00	50

APPLE.—

No. 336.	Coggswell, three premiums	$1 50	1 00	50	
No. 337.	Hubbardston, four premiums	2 00	1 50	1 00	50
No. 338.	McIntosh, four premiums	2 00	1 50	1 00	50
No. 339.	Varieties, not scheduled, four premiums	2 00	1 50	1 00	50

PEAR.—

No. 340.	Seckel, five premiums	3 00	2 00	1 50	1 00	50
No. 341.	Varieties, not scheduled, three premiums		1 50	1 00	50

GRAPE.

No. 342.	Concord, four premiums	2 00	1 50	1 00	50
No. 343.	Delaware, four premiums	2 00	1 50	1 00	50
No. 344.	Niagara, four premiums	2 00	1 50	1 00	50
No. 345.	Pocklington, three premiums		1 50	1 00	50
No. 346.	Salem, three premiums		1 50	1 00	50
No. 347.	Wilder, three premiums		1 50	1 00	50
No. 348.	Varieties, not scheduled, four premiums	2 00	1 50	1 00	50

QUINCE.—Twelve specimens.

No. 349.	Champion, four premiums	$2 00	1 50	1 00	50
No. 350.	Orange, four premiums	2 00	1 50	1 00	50
No. 351.	Other varieties, four premiums	2 00	1 50	1 00	50

POTATO.—

No. 352.	Six varieties (named), 12 specimens of each, four premiums	$3 00	2 00	1 50	1 00

SQUASH.—Three specimens.

No. 353.	Essex-Hybrid, four premiums	2 00	1 50	1 00	50
No. 354.	Warren, four premiums	2 00	1 50	1 00	50
No. 355.	Varieties, not scheduled, three premiums		1 50	1 00	50

CELERY,—Blanched—Six specimens.

No. 356.	Paris Golden, four premiums	2 00	1 50	1 00	50
No. 357.	White Plume, four premiums	2 00	1 50	1 00	50

Thursday, October 12.

☞ *The* Committee on Arrangements and Exhibitions *will meet at 3½ o'clock P. M., to hear motions, determine appeals, and act upon business properly submitted.*

This Exhibition will be open to the public from 12.30 until 9 P. M.

All articles for this Exhibition must be in the Hall and ready for inspection by the Judges, by 11 o'clock A. M. Dinner will be served in the Banquet Hall at 12.30. Tickets 50 cents. Followed by short addresses.

PLANTS,—in pots.—

No. 358.	Display, five premiums.	$4 00	3 00	2 00	1 50	1 00

FERNS,—IN POTS.—

No. 359.	Collection, four premiums	3 00	2 00	1 00	50

CUT FLOWERS.—

No. 360. In any form, gratuities.

APPLE.—

No. 361.	Baldwin, six premiums	$4 00	3 00	2 00	1 50	1 00	50
No. 362.	Canada Red (Old Nonesuch) three premiums				1 50	1 00	50
No. 363.	Russet, sweet, three premiums				1 50	1 00	50
No. 364.	Golden Russet of Mass., three premiums				1 50	1 00	50
No. 365.	Lemon Greening, three premiums				1 50	1 00	50
No. 366.	Belleflower, four premiums			2 00	1 50	1 00	50
No. 367.	Leicester Sweet, three premiums				1 50	1 00	50
No. 368.	Sutton Beauty, three premiums				1 50	1 00	50
No. 369.	Tompkins King, five premiums		3 00	2 00	1 50	1 00	50
No. 370.	Fallawater, four premiums			2 00	1 50	1 00	50
No. 371.	Peck, three premiums				1 50	1 00	50
No. 372.	Pound Sweet, three premiums				1 50	1 00	50
No. 373.	R. I. Greening, five premiums		3 00	2 00	1 50	1 00	50
No. 374.	McIntosh, five premiums		3 00	2 00	1 50	1 00	50
No. 375.	Northern Spy, five premiums		3 00	2 00	1 50	1 00	50
No. 376.	Palmer, five premiums		3 00	2 00	1 50	1 00	50
No. 377.	Roxbury Russet, four premiums			2 00	1 50	1 00	50
No. 378.	Collection, not to exceed ten varieties, four premiums		4 00	3 00	2 00	1 00	
No. 379.	Varieties, not scheduled, four premiums			2 00	1 50	1 00	50

PEAR.—

No. 380.	Angoulême, three premiums				1 50	1 00	50
No. 381.	Clairgeau, three premiums				1 50	1 00	50
No. 382.	Dana's Hovey, five premiums		3 00	2 00	1 50	1 00	50
No. 383.	Josephine de Malines, three premiums				1 50	1 00	50
No. 384.	Langelier, three premiums				1 50	1 00	50
No. 385.	Lawrence, six premiums	4 00	3 00	2 00	1 50	1 00	50

No. 386.	Winter Nelis, three premiums					1 50	1 00	50
No. 387.	Anjou, six premiums.	4 00	3 00	2 00	1 50	1 00	50	
No. 388.	Comice, six premiums	4 00	3 00	2 00	1 50	1 00	50	
No. 389.	Frederick Clapp, three premiums					1 50	1 00	50
No. 390.	Marie Louise, three premiums					1 50	1 00	50
No. 391.	Onondaga, three premiums					1 50	1 00	50
No. 392.	Bosc, eight premiums,	4 00	3 50	3 00	2 50	2 00	1 50	1 00	50
No. 293.	Sheldon, eight premiums,	4 00	3 50	3 00	2 50	2 00	1 50	1 00	50
No. 394.	Varieties, not scheduled, four premiums					2 00	1 50	1 00	50
	GRAPE,—OPEN CULTURE.—								
No. 395.	Collection of not less than five varieties, six premiums	3 00	2 50	2 00	1 50	1 00	50	
No. 396.	Diana, three clusters, three premiums					1 50	1 00	50
	PEACH.—							
No. 397.	Any variety, four premiums					2 00	1 50	1 00	50
	BRUSSELS SPROUTS.—							
No. 398.	Half-peck, three premiums					1 50	1 00	50
	CELERY,—Blanched—Six specimens.							
No. 399.	Boston Market, four premiums	$3 00	2 00	1 00	50			
No. 400.	Giant Pascal, four premiums	3 00	2 00	1 00	50			
No. 401.	Any varieties, not scheduled, four premiums	3 00	2 00	1 00	50			
	ENDIVE.—							
No. 402.	Six specimens, three premiums					1 50	1 00	50
	ONION.—							
No. 403.	Red Globe, twelve, three premiums					1 50	1 00	50
No. 404.	Yellow Globe, Danvers, three premiums					1 50	1 00	50
	SALSIFY.—							
No. 405.	Twelve specimens, three premiums					1 50	1 00	50
	SQUASH.—							
No. 406.	Hubbard, three specimens, four premiums	2 00	1 50	1 00	50			
No. 407.	Bay State, three specimens, four premiums	2 00	1 50	1 00	50			

PARSLEY.—

No. 408.	Half-peck, three premiums		1 50	1 00	50

TURNIP.—12 specimens.

No. 409.	Purple Top Globe, four premiums	2 00	1 50	1 00	50
No. 410.	White Egg, four premiums	2 00	1 50	1 00	50
No. 411.	White Swede, six specimens, three premiums		1 50	1 00	50
No. 412.	Yellow Swede, six specimens, three premiums		1 50	1 00	50

PARSNEP.—Twelve specimens.

No. 413.	Three premiums		1 50	1 00	50

Annual Meeting, Wednesday, November 1, 1899.

OFFICERS AND COMMITTEES
OF THE
WORCESTER COUNTY HORTICULTURAL SOCIETY,
FOR THE YEAR 1898-99.

PRESIDENT:

O. B. HADWEN, of Worcester.

VICE-PRESIDENTS:

STEPHEN SALISBURY, of Worcester; GEORGE E. FRANCIS, of Worcester; CALVIN L. HARTSHORN, of Worcester.

SECRETARY:

ADIN A. HIXON, of Worcester.

TREASURER:

NATHANIEL PAINE, of Worcester.

LIBRARIAN:

ADIN A. HIXON, of Worcester.

TRUSTEES (BY ELECTION):

George Cruikshanks,	Lunenburg.	David L. Fiske,	Grafton.
O. B. Wyman,	Shrewsbury.	Henry B. Watts,	Leicester.
Charles E. Parker,	Holden.	W. U. Maynard,	Shrewsbury.
Frederick A. Blake,	Rochdale.	Edward A. Bartlett,	"
Henry L. Parker,	Worcester.	Simeon E. King,	Millbury.
Henry Woodward,	"	E. M. Bruce,	Leominster.
John B. Bowker,	"	George McWilliams,	Whitinsville.
B. W. Potter,	"	Edward L. Davis,	Worcester.
Frank J. Kinney,	"	Henry Reed,	"
Alden Rice,	"	Henry Phelps,	"
Arthur E. Hartshorn,	"	Luther R. Eames,	"
George F. Hoar,	"	Frederic G. Stiles,	"
George Calvin Rice,	"	John Midgley,	"
Louis J. Kendall,	"	Stillman H. Record,	"
William O'Connell,	"	Simon E. Fisher,	"
Charles Greenwood,	"	Lewis A. Peters,	"
Arthur J. Marble,	"	William J. Wheeler,	"
Samuel Flagg,	"	J. Lewis Ellsworth,	"
Edward Hall,	"	Frederick B. Madaus,	"
H. F. A. Lange,	"	Mrs. John H. Coes,	"
Fred. H. Chamberlain,	"	Mrs. T. L. Nelson,	"
William J. Wood,	"	Mrs. Thomas Ward.	"
Henry Rich,	"	Mrs. F. H. Merrifield,	"

STANDING COMMITTEES.

ON FINANCE:

Fred. H. Chamberlain, 1900. George E. Francis, 1899. Nathaniel Paine, 1901.

ON LIBRARY AND PUBLICATION:

Adin A. Hixon, George E. Francis, M.D., Joseph Jackson.

ON NOMENCLATURE:

O. B. Hadwen, George E. Francis, Albert H. Lange, Arthur J. Marble, George McWilliams, Herbert R. Kinney, Charles Greenwood.

ON ARRANGEMENTS AND EXHIBITIONS:

Charles Greenwood, *Chairman.*

Frederick A. Blake,	William J. Wood,	George C. Rice,
Edward Hall,	Henry L. Parker,	Calvin L. Hartshorn,
Albert H. Lange,	James Draper,	Simon E. Fisher,
Mrs. F. H. Merrifield,	Arthur J. Marble,	Herbert R. Kinney,
George McWilliams,	George E. Francis, M.D.,	Henry Rich,
Mrs. G. McWilliams,		

President Hadwen, and *Secretary* Hixon.

AUDITORS.

Henry L. Parker, Fred H. Chamberlain.

JUDGES.

ON FLOWERS, PLANTS, ETC.: George McWilliams, Whitinsville.

ON FRUITS, ETC.: Henry Rich.

VEGETABLES: Charles Greenwood.

NATIVE MUSHROOMS: George E. Francis, M.D